Schwank
INNOVATIVE HEATING SOLUTIONS

infrasave
radiant heaters

bistroSchwank Series
Models: 2100; 2100-SS*
2152; 2152-SS*

Series Models:
IO-100; IO-100-SS*
IO-152; IO-152-SS*

** Marine Grade Stainless Steel Cabinet*

Patio Heater for Outdoor Application and Gas-Fired High Intensity Infrared Heater for Commercial / Industrial Non-Residential Indoor Spaces

INSTALLATION / OWNER'S MANUAL

WARNING Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death.

Read the installation and operating and maintenance instructions thoroughly before installing or servicing this equipment.

SAFETY ALERT:

This heater must be installed and serviced only by a trained gas service technician. Failure to comply could result in personal injury, death, fire and/ or property damage.

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other gas fired appliance.

This heater is not approved for <u>indoor</u> residential application.

IF YOU SMELL GAS:

- Extinguish any open flame
- Do not attempt to light this or any other appliance
- Don't touch any electrical switch, or telephone
- Immediately leave the area and call your gas supplier from a neighbor's phone
- Follow any and all instruction from your gas supplier
- If your gas supplier is not available, call the fire department

FIELD CONVERTIBILITY:
This appliance is field convertible to LP gas (except 2152/IO-152: NG only).

Only use kit available from manufacturer.

Follow kit instructions and all local and national codes.

INSTALLER: PRESENT THIS MANUAL TO THE END USER.
Keep this manual in a secure place.
Record for future reference:

Model #: _____

Serial #: _____
(located on heater rating label)

CERTIFIED ®

DESIGN CERTIFIED ®

2100 / IO 100 Manual
IM110107
RD: MAY 2014
R.L. 4A

NOTICE:

The manufacturer reserves the right to make changes to equipment and specifications without obligation or notification.

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www.InfraSave.com

Models: 2100; 2100-SS; 2152; 2152-SS
IO-100; IO-100-SS; IO-152; IO-152-SS

Patio Heater for Outdoor Application and Gas-Fired Luminous (High Intensity) Infrared Heater for Commercial / Industrial Non-Residential Indoor Spaces

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IMPORTANT

Installer: Present this manual to the end user. Acquaint the end user with Important Information: Cover & pages 4 to 7.

END USER: In particular you must be aware of 'Clearances to Combustible' requirements and the limitations of stacking or placing material near the heaters.

Inform your safety personnel and staff of this information.

WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read and understand this installation and operation manual thoroughly prior to assembly, installation, operation or service to this appliance.

This heater must be installed and serviced only by a trained gas service technician.

Do not store or use gasoline or other flammable vapours and liquids in the vicinity of this or any other gas fired appliance.

Failure to comply to these warnings could result in personal injury, death, fire and/or property damage.

This appliance may have sharp edges and corners. Wear protective clothing such as gloves and protective eye wear when servicing this or any other appliance.

WARNING

DO NOT INSTALL THIS APPLIANCE IN A RECESS, ALCOVE, OR ENCLOSURE.

While minimum clearances to combustibles are stipulated to ensure safe installation, adequate free space must be provided to allow the products of combustion to escape from the heater to atmosphere when installed outdoors, or to mechanical exhaust withdrawal when installed indoors. Also refer to “Outdoor” and “Indoor” definitions and requirements on page 9.

Do not allow the products of combustion to accumulate in any space or enclosure.

WARNING

Due to the effects of radiant heat upon certain materials it is not recommended to store or place items that could be damaged or distorted, directly under this heater....i.e. combustible patio furniture etc.

- Clothing or other flammable materials should not be hung from, or placed near to the heater
- Children and Adults should be alerted to the hazards of high surface temperatures and should be careful to avoid burns or clothing ignition
- Young children should be carefully supervised when in the area of a heater

WARNING

This heater is not for installation in a Class 1 or Class 2 explosive environment, nor for any residential application. If installation of this equipment is in question, consult with local authorities having jurisdiction (Fire Marshal, labor department, insurance underwriter, or others).

Revisions to codes and/or standards, may require revision to equipment and installation procedures. In case of discrepancy, the latest codes, standards, and installation manual will take priority over prior releases.

IMPORTANT: DO NOT INSTALL THIS HEATER INDOORS IN A STRUCTURE WITH NO INSULATION IN THE ROOF—CONDENSATION WILL OCCUR.

WARNING Heater Expansion

It is a normal condition that during heat-up and cool-down a radiant heater will expand and contract. Allowances for heater expansion must be made in the gas connection and heater suspension. Improper installation, alteration, or adjustment can result in property damage, injury or death.

WARNING Gas Connection

Improper installation, connection, or adjustment can result in property damage, toxic gases, asphyxiation, injury or death. Use an approved stainless steel flexible gas connector (field supplied) to connect to the gas supply to the heater in accordance with all local, state, provincial, and national codes (ANSI Z223.1/NFPA 54 in USA; B149.1 in Canada) and as indicated in this manual.

WARNING Venting

Inadequate venting of a heater may result in asphyxiation, carbon monoxide poisoning, injury or death. When used indoors, this heater is indirectly vented from the space. Venting must be in accordance with all local, state, provincial, and national codes (ANSI Z223.1/NFPA 54 in USA; B149.1 in Canada) and as indicated in this manual. **Refer to Section 13**

WARNING Start-up 'Smoke' & Discoloration Condition

During start-up, the heating of material coatings used in the production process of the heater may create a small amount of smoke during the initial period of operation. This condition is normal and temporary .

Ensure that there is sufficient ventilation to adequately clear any 'smoke' from the space.

Notify site management and safety personnel to ensure that alarm systems are not unduly activated.

WARNING Heater Discoloration / Staining

Stainless Steel & Painted Finishes: Surface discoloration or staining will occur on any heater body due to heat. Discoloration due to heat is a normal occurrence especially with all stainless steel. Surface discoloration does not affect the operation or performance of the heater nor the manufacturer's component warranties. *(Refer to Section 12: Heater Finish & Appearance, page 20)*

Some discoloration may be the result of the deposit of ambient air-borne particulate or gases within the space that have passed through combustion to create 'smoke'. The combustion of fuel gas in a clean environment will not cause smoke discoloration deposits.

WHEN INSTALLED AS AN OUTDOOR PATIO HEATER

- *see pages 9 - 10 for Indoor installation*
- *Also refer to "Outdoor" and "Indoor" definitions and requirements on page 11*

WARNING

Certain materials or items, when stored under the heater, will be subjected to radiant heat and could be seriously damaged.

Location of flammable or explosive objects, liquids or vapors close to the heater may cause fire or explosion and result in property damage, injury or death. Do not use, store or locate flammable or explosive objects, liquids or vapors in proximity of the heater.

The clearance to combustible material represents the minimum distance that must be maintained between the outer heater surface and a nearby surface. The stated clearance to combustibles represents a surface temperature of 117F° (65C°) above ambient temperature when installed outdoors.

<u>It is the installer's responsibility to ensure that building materials with a low heat tolerance which may degrade at lower temperatures are protected to prevent degradation</u>. Examples of low heat tolerance materials include vinyl siding, fabrics, some plastics, filmy materials, etc.

It is beyond the scope of these instructions to consider all conditions that may be encountered. Consult local authorities such as the Fire Marshall, insurance carrier, or safety authorities if you are uncertain as to the safety or applicability of the proposed installation.

Refer to Table 1 & Figure 1 Next Page for the minimum mounting and clearances to combustibles for Outdoor Patio application.

WARNING

DO NOT INSTALL THIS APPLIANCE IN A RECESS, ALCOVE, OR ENCLOSURE.

Adequate free space must be provided to allow the products of combustion to escape from the heater to atmosphere when installed outdoors, or to mechanical exhaust withdrawal when installed indoors. Do not allow the products of combustion to accumulate in any space or enclosure.

Note: Do not store or place anything directly under heater

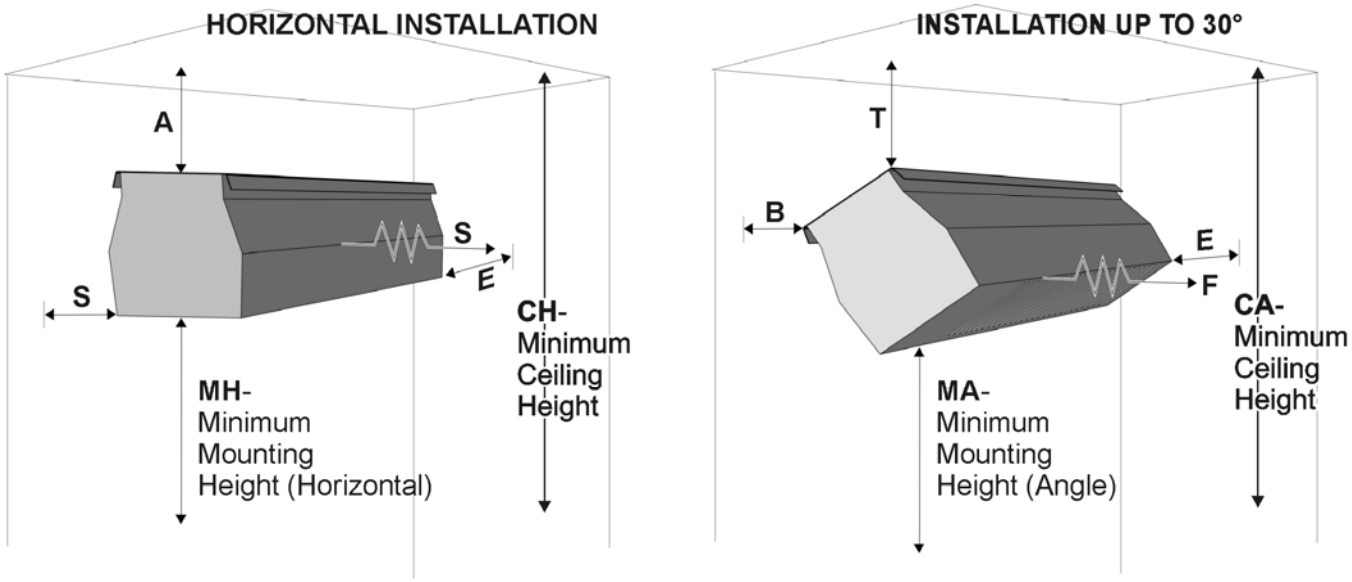
Ensure mounting height in any location is sufficient to prevent patrons from coming in contact with heater, and clearance to combustibles is maintained.

Table 1: OUTDOOR - MINIMUM MOUNTING & CLEARANCES TO COMBUSTIBLES

MODEL NO	Ends	HORIZONTAL				UP TO MAXIMUM 30° ANGLE				
	E	A	S	MH	CH	T	B	F	MA	CA
2135 / IO-135 -N\L	14”	13”	14”	108”	133”	17”	9”	60”	102”	127”
2150/ IO-150 -N\L	14”	16”	19”	120”	148”	20”	8”	62”	114”	142”
2152/ IO-152 -N\L	14”	16”	19”	120”	148”	20”	8”	62”	114”	142”

Figure 1: OUTDOOR - MOUNTING CLEARANCES

NOTE: MOUNT HEATER AT MAXIMUM 30° ANGLE TO AVOID DAMAGE



See Table 2 Next Page for “Suggested Mounting Height for Comfort”

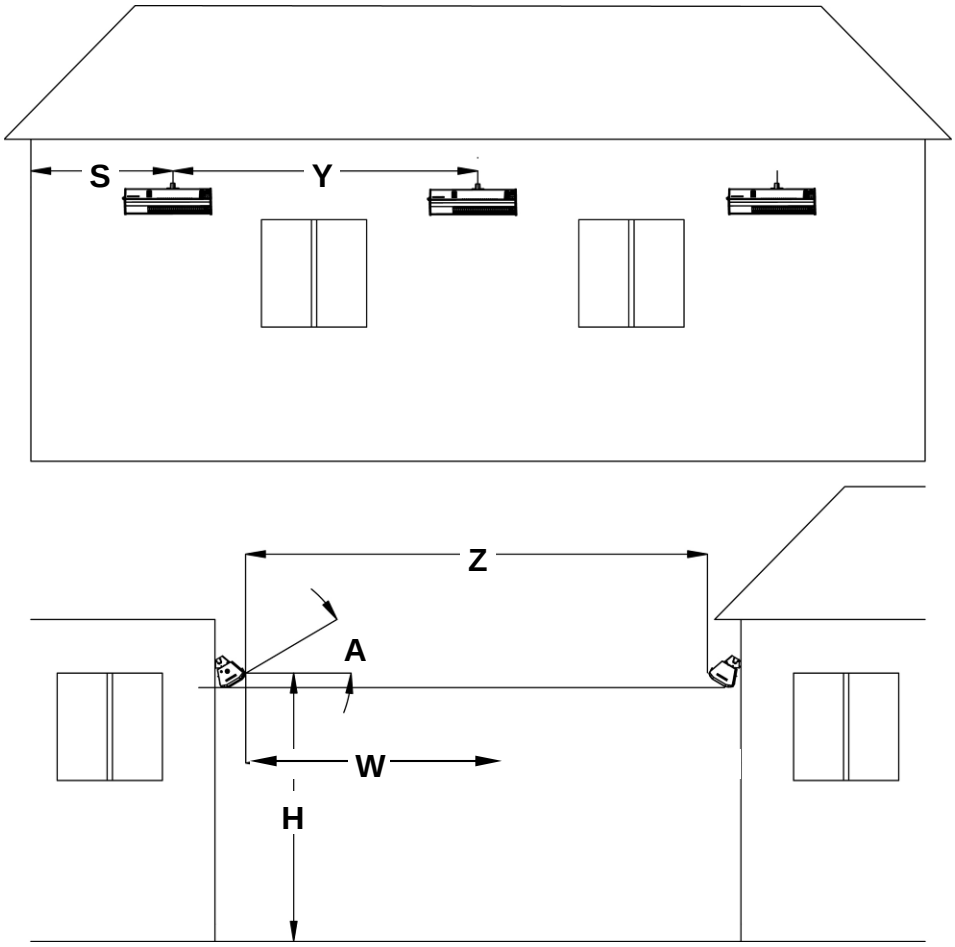
The clearance to combustible material represents the minimum distance that must be maintained between the outer heater surface and a nearby surface. In an OUTDOOR application the stated clearance to combustibles represents a surface temperature of 117F° (65C°) above ambient temperature.

It is the installer’s responsibility to ensure that building materials with a low heat tolerance which may degrade at lower temperatures are protected to prevent degradation. Examples of low heat tolerance materials include awnings, vinyl siding, fabrics, some plastics, filmy materials, etc.

Table 2: SUGGESTED MOUNTING DISTANCES FOR COMFORT

MOUNTING PARAMETERS ***	**MODEL 2135** (-SS) **/ IO-135** (-SS) **35,000 Btuh**		**MODEL 2150 / 2152** (-SS) **IO-150 / IO-152** (-SS) **50,000 Btuh**	
A - Mounting angle	Horizontal	**30^0**	Horizontal	**30^0**
H - Suggested height above deck	9’ 6”	9’ 0”	10’ 6”	10’ 0”
S - Side distance to patio edge	4’ 0”	4’ 0”	5’ 0”	5’ 0”
Y - Side distance between heaters	8’ 0”	8’ 0”	10’ 0”	10’ 0”
W - Distance effective coverage	7’ 0”	8’ 0”	8’ 0”	10’ 0”
Z - Front distance between heaters	14’ 0”	16’ 0”	15’ 0”	18’ 0”

Figure 2: MOUNTING PARAMETER DISTANCES



*** Note: Mounting angles and distances are suggested to ensure comfort, and are subject to site and design conditions.

If in doubt, please contact your Schwank / InfraSave distributor.

Ensure mounting height in any location is sufficient to prevent patio patrons from coming in contact with the heater

WHEN INSTALLED INDOORS FOR COMFORT OR SPACE HEAT

- *see pages 6- 8 for Outdoor installation*
- *Also refer to "Outdoor" and "Indoor" definitions and requirements on page 11*
- *And refer to Indoor Ventilation Requirements page 19*

WARNING Clearance to Combustibles

Location of flammable or explosive objects, liquids or vapors close to the heater may cause fire or explosion and result in property damage, injury or death. Do not use, store or locate flammable or explosive objects, liquids or vapors in proximity of the heater.

The clearance to combustible material represents the minimum distance that must be maintained between the outer heater surface and a nearby surface. The stated clearance to combustibles represents a surface temperature of 90F° (50C°) above room temperature.

<u>It is the installer's responsibility to ensure that building materials with a low heat tolerance which may degrade at lower temperatures are protected to prevent degradation</u>. Examples of low heat tolerance materials include vinyl siding, fabrics, some plastics, filmy materials, etc.

In locations used for the storage of combustible materials, signs must be posted to specify the maximum permissible stacking height to maintain the required clearances from the heater to the combustibles. Such signs must either be posted adjacent to the heater thermostats or in the absence of such thermostats in a conspicuous location.

In addition to stored or stationary material, consideration must also be given to moveable objects such as cranes, vehicles, and overhead doors, and structural objects such as electrical and gas lines, electrical fixtures, and sprinkler heads.

Heaters must be located an appropriate distance from sprinkler heads. This distance may be greater than the certified clearance to combustibles. Check the temperature rating of the sprinkler heads and locate heaters at a safe distance - in some instances the sprinkler heads may need to be replaced by higher temperature heads.

It is beyond the scope of these instructions to consider all conditions that may be encountered. Consult local authorities such as the Fire Marshall, insurance carrier, or safety authorities if you are uncertain as to the safety or applicability of the proposed installation.

Refer to Figure 3 and Table 3 NEXT PAGE for the mounting requirements and certified clearances to combustibles for indoor installation. Also refer to ventilation requirements for indoor installations on page 19.

WARNING DO NOT INSTALL THIS APPLIANCE IN A RECESS, ALCOVE, OR ENCLOSURE.

Adequate free space must be provided to allow the products of combustion to escape from the heater to atmosphere when installed outdoors, or to mechanical exhaust withdrawal when installed indoors. Also refer to "Outdoor" and "Indoor" definitions and requirements on page 11.

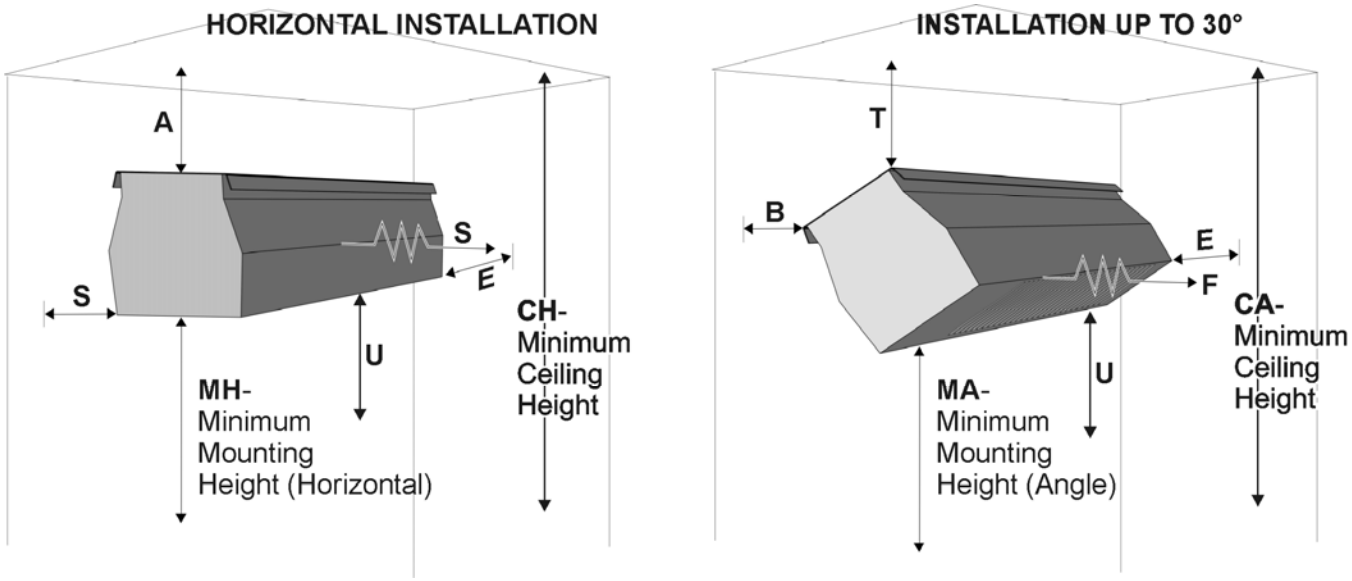
Do not allow the products of combustion to accumulate in any space or enclosure.

Table 3: INDOOR - MINIMUM MOUNTING & CLEARANCES TO COMBUSTIBLES

MODEL NO	Ends	Under	HORIZONTAL				UP TO MAXIMUM 30° ANGLE				
	E	U	A	S	MH	CH	T	B	F	MA	CA
2135 / IO-135 -N\L	14”	45”	18”	18”	108”	138”	20”	11”	60”	102”	132”
2150 / IO150 -N\L	14”	60”	21”	23”	120”	153”	25”	10”	62”	114”	147”

Figure 3: INDOOR - MOUNTING CLEARANCES

NOTE: MOUNT HEATER AT MAXIMUM 30° ANGLE TO AVOID DAMAGE



The clearance to combustible material represents the minimum distance that must be maintained between the outer heater surface and a nearby surface. The stated clearance to combustibles represents a surface temperature of 90F° (50C°) above indoor room temperature.

It is the installer’s responsibility to ensure that building materials with a low heat tolerance which may degrade at lower temperatures are protected to prevent degradation. Examples of low heat tolerance materials include awnings, vinyl siding, fabrics, some plastics, filmy materials, etc.

Note: Do not store or place anything directly under heater

Ensure mounting height in any location is sufficient to prevent patrons from coming in contact with heater, and clearance to combustibles is maintained.

Table 4: INDOOR - SUGGESTED MOUNTING HEIGHT FOR COMFORT

MOUNTING PARAMETERS ***	MODEL 2135 / IO-135 35,000 Btuh		MODEL 2150/2152 / IO-150/152 50,000 Btuh	
Mounting angle	Horizontal	**30^0**	Horizontal	**30^0**
Suggested height above deck/floor	9’ 6”	9’ 0”	10’ 6”	10’ 0”

HEATER DIMENSIONS & CONFIGURATIONS

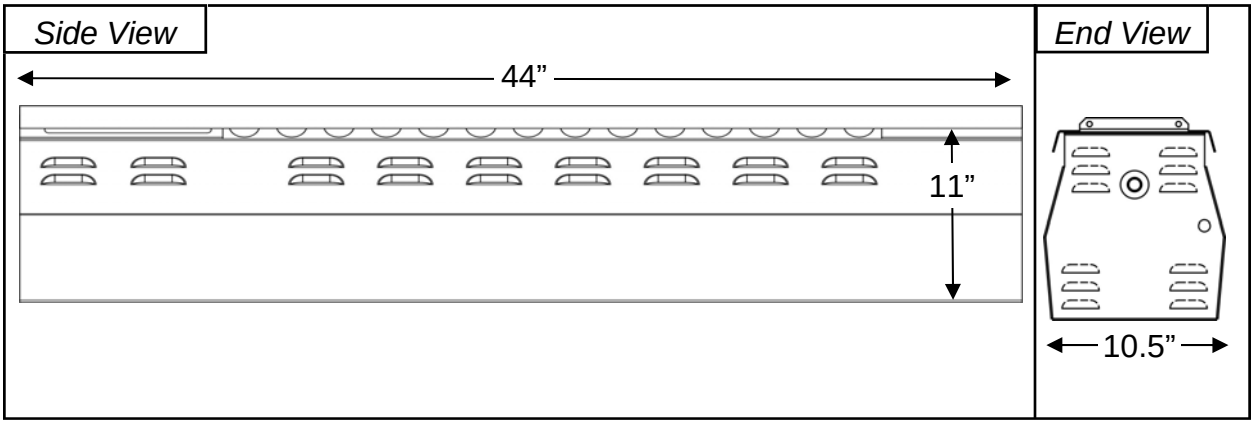
Table 3: CAPACITIES & CONFIGURATIONS

MODEL*	Voltage VAC	Current amps	Btu/hr input	Total Weight lbs. [kg]	Length Inches [mm]
2135 (-SS) / IO-135 (-SS)	24	40 VA**	35,000	39 [18]	44" [1118]
2150 (-SS) / IO 150 (-SS)	24	40 VA**	50,000	44 [20]	44" [1118]
2152 (-SS) / IO 152 (-SS)	24	40 VA**	50,000 / 36,500	44 [20]	44" [1118]

- Add fuel gas designation to model number: -N for natural gas; -L for
- Standard model constructed of weather resistant aluminized steel with a high temperature flat black coating. The "-SS" model is constructed with a stainless steel weather enclosure
- Model 2152 / IO-152 is a two-stage heater

** Transformer Capacity: For multiple heater installation, the first heater requires 40VA and each consecutive heater requires 20VA. The sum total will be the required Transformer capacity. If total VA exceeds one transformer capacity select the next higher VA rated transformer.

Figure 3: DIMENSIONS



MOUNTING KIT OPTIONS *see illustrations next page*

Chain mounting bracket JP-2100-HS is supplied as an integral part of the heater. Other optional mounting kits are available:

ITEM NO	PART NUMBER	DESCRIPTION
1	JP-2100-MB	WALL MOUNTING BRACKET
2	JP-2300-MK	ARM MOUNTING BRACKET
3	JP-2300-PK	POST BRACKET

WARNING: *Wall Mounting Bracket JP-2100-MB, or Arm Mounting Bracket JP-2300-MK: Ensure that anchoring to the structure is of sufficient strength, integrity and workmanship, to adequately support the weight of the heater and any other potential loads such as snow build up.* ***Mount heater up to maximum 30° angle.***

Figure 4: MOUNTING KIT OPTIONS

NOTE: MOUNT HEATER AT MAXIMUM 30° ANGLE TO AVOID DAMAGE

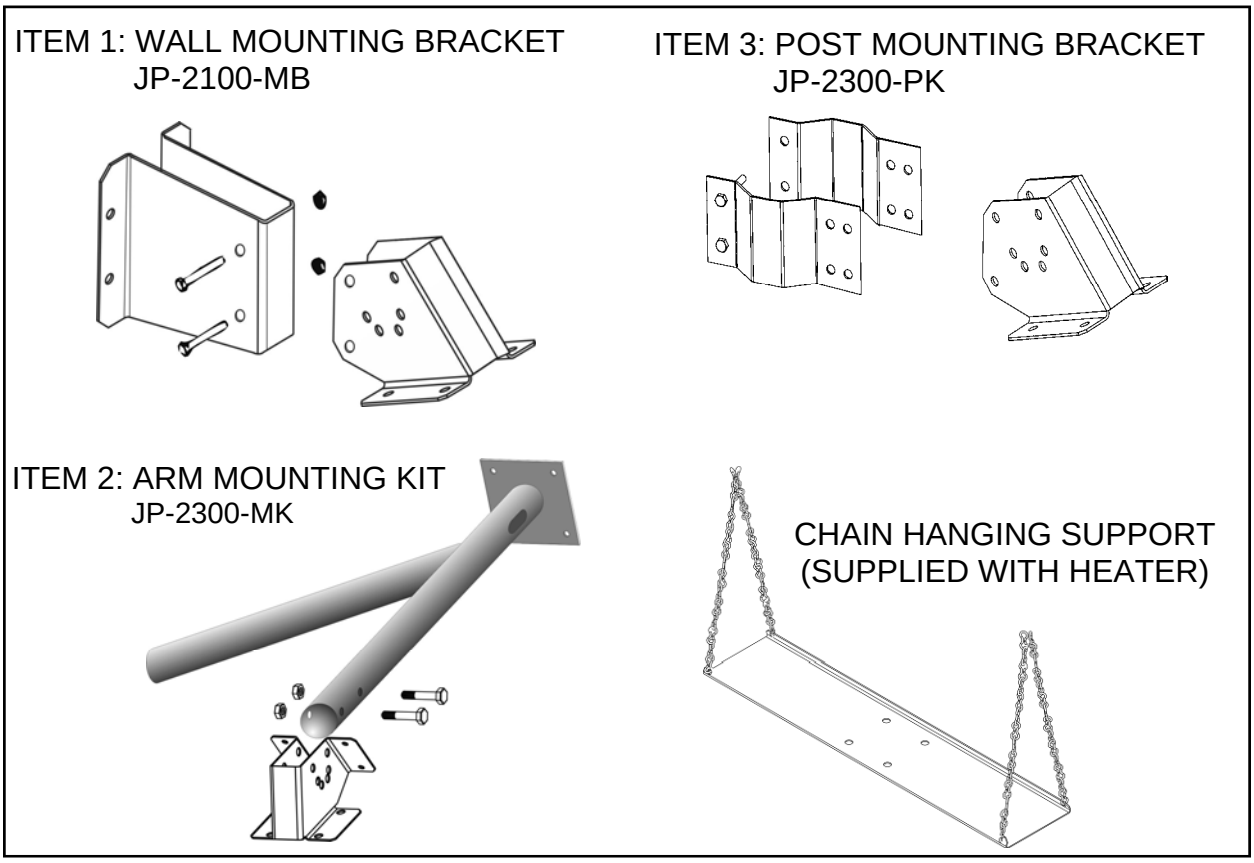


Figure 5: MOUNTING OPTIONS

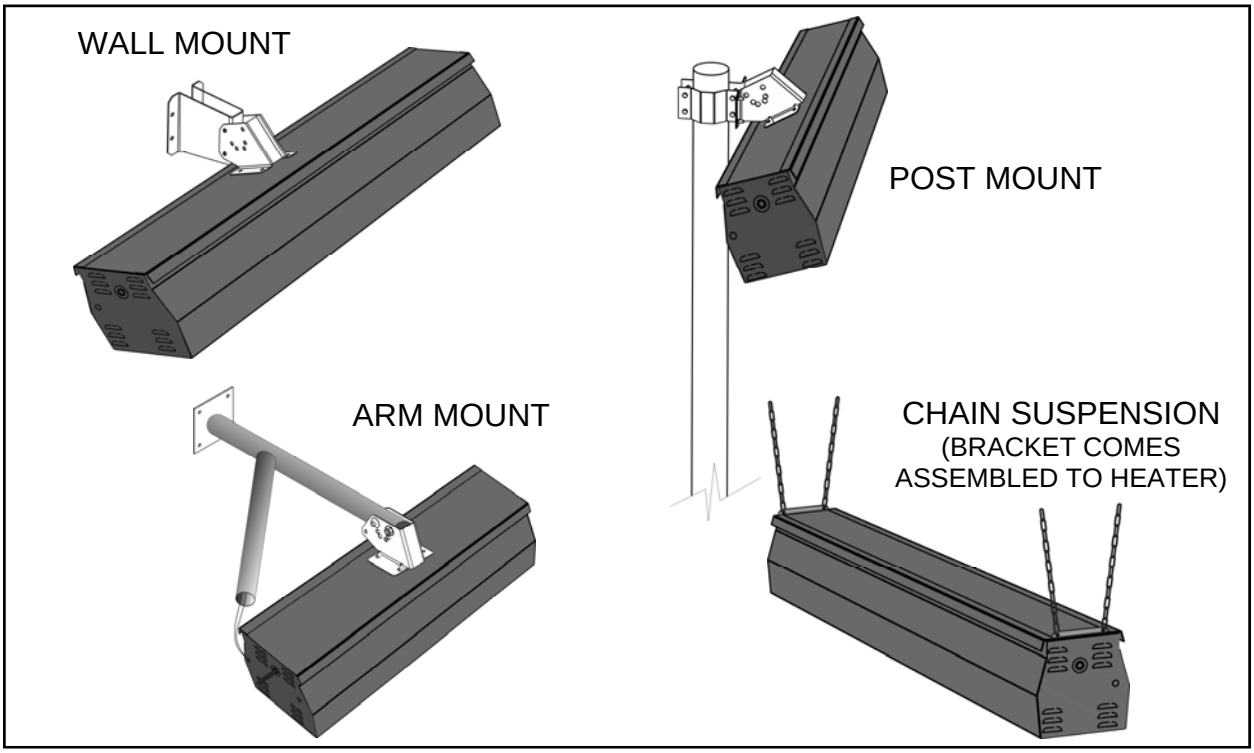


Figure 6: MOUNTING ARM WALL PLATE (for JP-2300-MK)

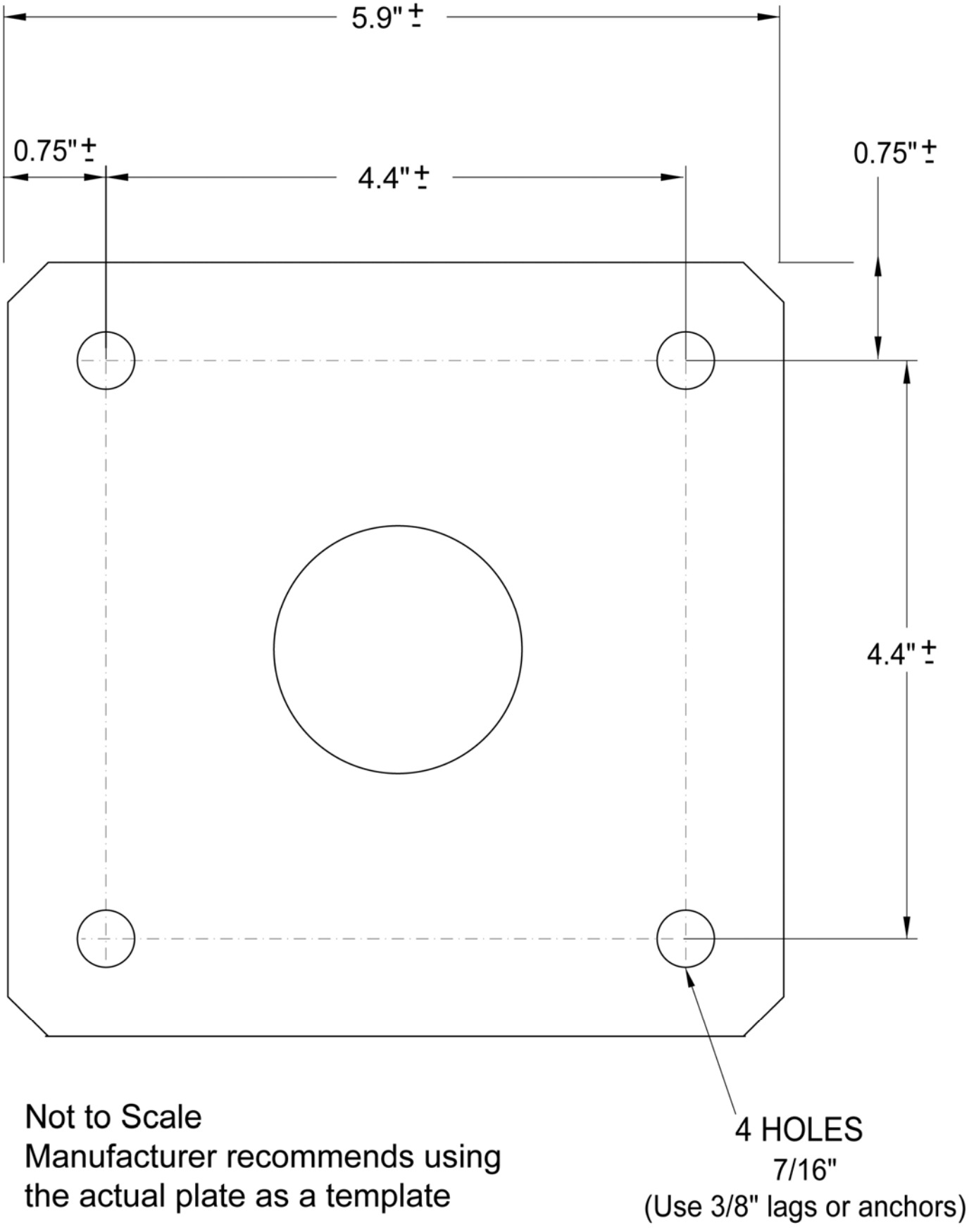
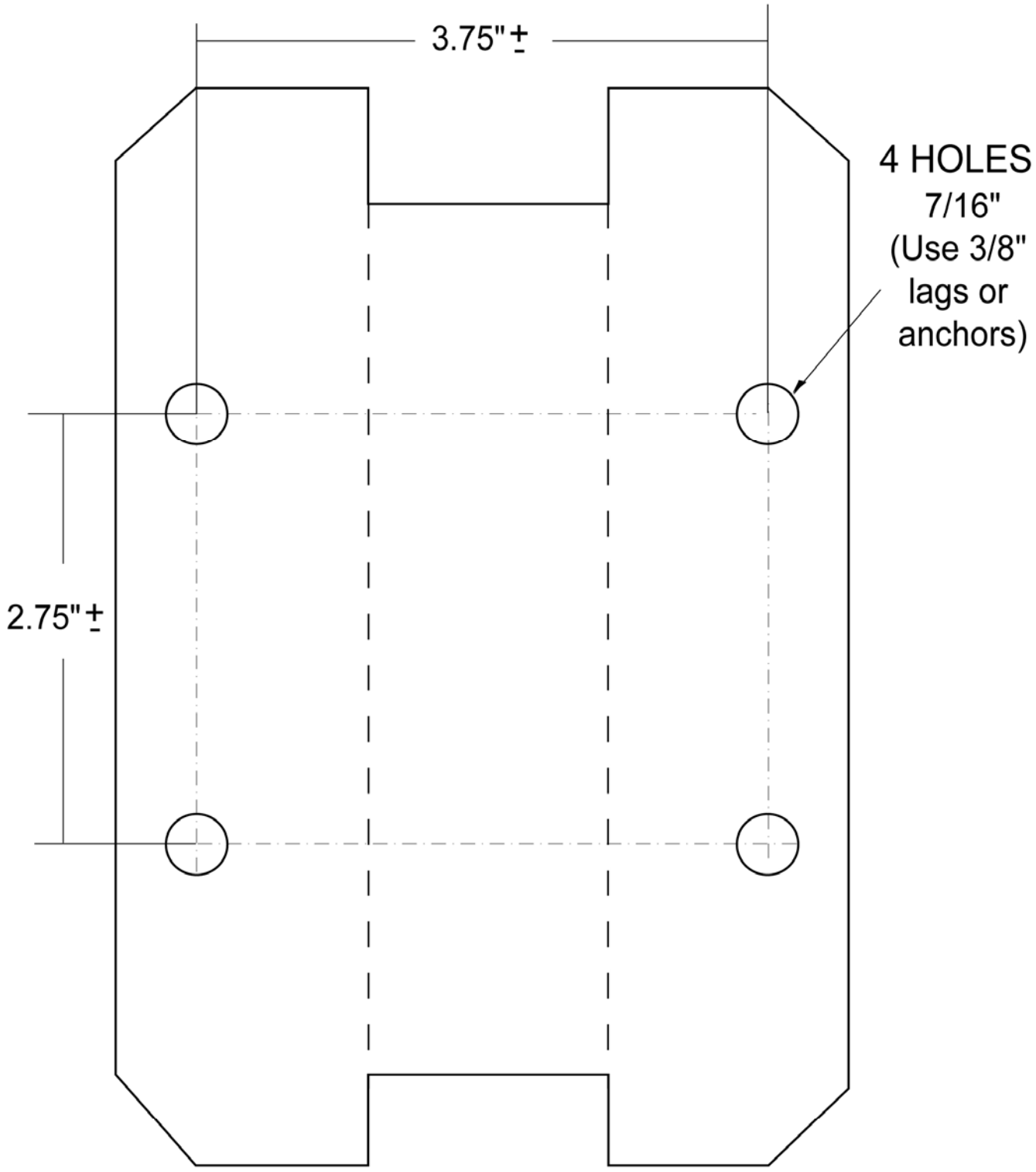


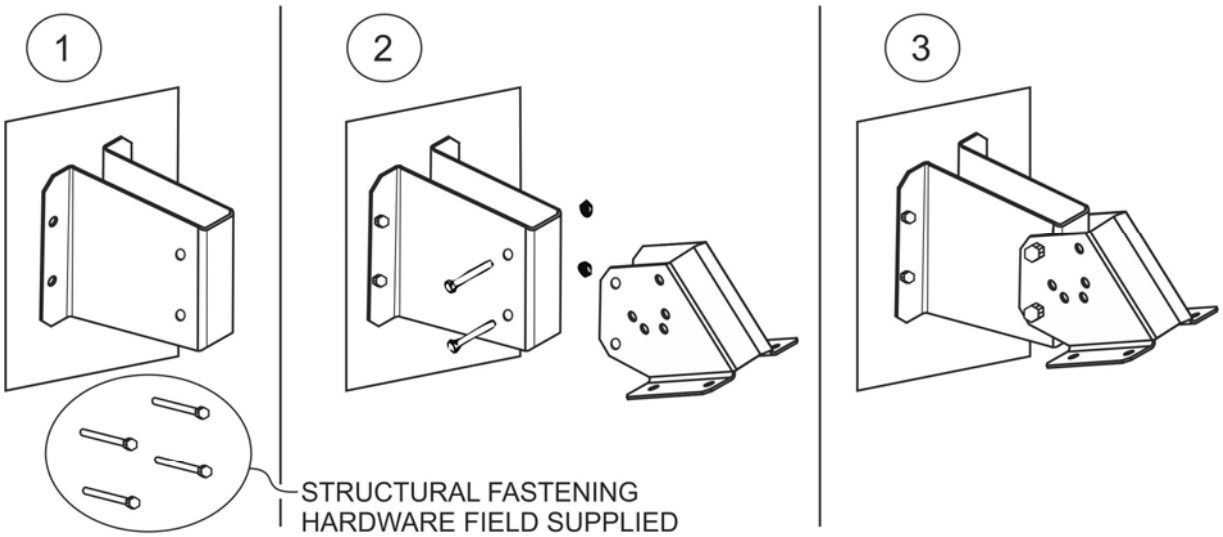
Figure 7: <u>WALL MOUNT BRACKET</u> JP-2100-MB

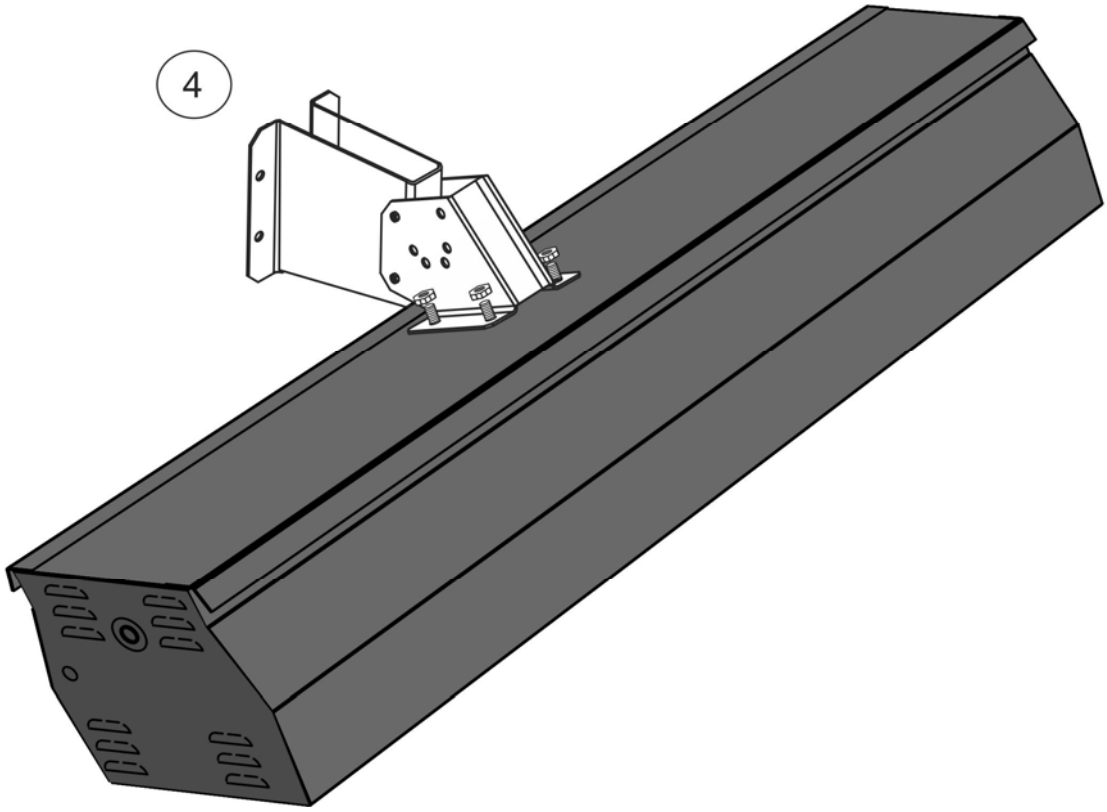


Not to Scale
Manufacturer recommends using
the actual plate as a template

Figure 8: HEATER INSTALLATION: WALL MOUNT BRACKET

NOTE: MOUNT AT MAXIMUM 30° ANGLE TO AVOID DAMAGING HEATER





1. Install the Wall Mount Bracket to the structure using field supplied hardware. Ensure strength and integrity of mechanical fastening to structure for the weight of the heater and any potential snow load.
2. Install the heater bracket on the heater using four nuts.
3. Install the heater bracket to the wall mount bracket, and remove the chains from the top of the heater.

1. APPLICATION: This gas-fired infrared heater is suitable for installation for heating of outdoor commercial / industrial / residential areas and indoor commercial / industrial / non-residential spaces.

It is beyond the scope of these instructions to consider all conditions that may be encountered. Installation in the USA must conform to all local and national code requirements including the current National Fuel Gas code ANSI Z223.1, and the National Electrical Code ANSI/NFPA No 70 (latest edition). All installations in Canada must conform to local and national code requirements including, CAN/CGA-B149.1 installation code for gas burning appliances and equipment and the Canadian Electrical Code PART 1 CSA C22.1 (latest edition). In case of discrepancy due to revisions to standards and codes, the latest standards, codes, and installation manual are in effect and take priority.

DO NOT INSTALL THIS APPLIANCE IN A RECESS, ALCOVE, OR ENCLOSURE.

Adequate free space must be provided to allow the products of combustion to escape from the heater to atmosphere when installed outdoors, or to mechanical exhaust withdrawal when installed indoors. Also refer to "Outdoor" and "Indoor" definitions and requirements below.

Do not allow the products of combustion to accumulate in any space or enclosure

OUTDOOR / PATIO Installation:

This heater is certified for use on outdoor patio's in accordance with ANSI Z83.26 / CSA 2.37 . Schwank warrants that the heater will operate as designed in mild wind conditions up to 10 MPH. Note this unit is not designed to operate in adverse weather conditions including higher wind speeds exceeding the certification requirement of 10 MPH.

What is "Outdoor"?:

An appliance approved for "outdoor use" may be installed with shelter no more inclusive than:

- With walls on all sides, but with no overhead cover, (overhead permanently open) *or*
- Within a partial enclosure which includes an overhead cover and no more than two side walls. These side walls may be parallel, as in a breezeway, or at right angle to each other. The open sides must be permanently open *or*
- Within a partial enclosure which includes an overhead cover and three side walls, as long as 30 percent or more of the horizontal periphery of the enclosure is permanently open.

If these "outdoor" conditions are not met, the appliance is approved for "indoor use" and ventilation requirements of local codes apply. See "Indoor Application" below.

INDOOR Installation:

This heater is certified for space or spot heating of commercial / industrial non-residential indoor spaces in accordance with ANSI Z83.19b / CSA 2.35b.

WARNING Inadequate venting of a heater may result in asphyxiation, carbon monoxide poisoning, injury or death. Heating system venting must be in accordance with all local, state, provincial, and national codes (ANSI Z223.1/NFPA 54 in USA; B149.1 in Canada).

INDOOR INSTALLATION IN A STRUCTURE THAT HAS NO INSULATION IN THE ROOF CAN RESULT IN THE FORMATION OF CONDENSATION ON COLD SURFACES.

2. INSTALLATION IN COMMERCIAL AIRCRAFT HANGARS

Luminous (high intensity) radiant tube heaters are suitable for use in aircraft hangars when installed in accordance with the latest edition of the Standard for *Aircraft Hangars*, ANSI/NFPA No 409 in the USA, or the Canadian *Natural Gas and Propane Installation Code*, B149.1.

A. A minimum clearance of 8 ft (2.4 m) must be maintained from the bottom of the heater to the floor in other sections of the aircraft hangar, such as offices and shops, which communicate with areas for servicing or storage. Refer to Table 1 for clearances to combustibles.

B. Heaters must be located so as to be protected from damage by aircraft and other objects, such as cranes and movable scaffolding.

C. Heaters must be located so as to be accessible for servicing and adjustment.

3. INSTALLATION IN COMMERCIAL GARAGES AND PARKING STRUCTURES

Luminous (high intensity) radiant heaters are suitable for use in commercial garages when installed in accordance with the latest edition of the Standard for *Parking Structures*, ANSI/NFPA 88A, or the Standard for *Repair Garages*, ANSI/NFPA No. 88B, or the Canadian *Natural Gas and Propane Installation Code*, B149.1.

WARNING An overhead heater shall be located to maintain the minimum distance to combustibles, as shown on the heater rating plate, from the heater to any vehicles parked below the heater.

Overhead heaters shall be installed at least 8 ft (2.4 m) above the floor.

4. INSTALLATIONS OTHER THAN SPACE HEATING

Use for process or other applications that are not space heating will void the C.S.A. certification and product warranty. Process application requires field inspection and/or certification by local authorities having jurisdiction. Process application design should be provided by local experienced process design experts.

5. PRE INSTALLATION SURVEY

It is recommended that a full heating design including heat loss calculation be conducted on the structure or area to be heated. Heater sizing and placement must consider available mounting height, sources of greatest heat loss, and obstructions on the site. The certified clearances to combustibles with respect to stored material, moveable objects (cranes, vehicles, lifts, overhead doors, etc), structural components, and sprinkler system heads. Consideration must also be given to ventilation fan placement (outdoor heaters do not require ventilation). Carefully survey the area to be heated, and for best results place heaters in the coldest area(s) and at sufficient spacing to provide uniform radiant heat coverage.

Installation must conform with all local, state, provincial and national code requirements including the current latest edition ANSI Z223.1 (NFPA 54) in the U.S.A. and B149.1 installation code in Canada, for gas burning appliances and equipment. The latest edition Electrical Code ANSI/NFPA N0 70 in the U.S.A. and PART 1 CSA C22.1 in Canada must also be observed.

The heating system must have gas piping of the correct diameter, length, and arrangement to provide for and satisfy the total system input. A layout drawing is necessary to calculate properly sized gas supply piping.

6. INSTALLATION REQUIREMENTS

Handle heater with care during installation and service to avoid scratching or damaging the surface finish.

NOTE: MOUNT HEATER AT MAXIMUM 30° ANGLE TO AVOID DAMAGE

6.1 MOUNTING CLEARANCES

Series 2100 / IO-100 Heaters must be mounted with minimum clearances to combustible materials. Refer to the introductory section “Clearance to Combustibles” page 6 and to Table 1 and Figure 1 page 7.

THIS HEATER HAS HOT SURFACES: Minimum mounting height is to be no less than 96” [244 cm] above the floor / deck to the bottom of the heater. Do not locate heater where patrons can come into contact with heater. Do not store or place items directly underneath heater. Maintain clearance to combustibles.

The heater must be located with respect to building construction and equipment so as to provide sufficient clearance and accessibility for servicing of burner and ignition control and cleaning . Provide adequate clearance around air openings into the combustion chamber.

6.2 HEATER MOUNTING

Refer to Table 2 and Figure 2. Series 2100 / IO-100 Heaters are approved for both horizontal and angle mounting on the short axis. **A maximum 30° mounting angle is allowed to prevent damage to the heater. Improper angle mounting can result in damage to the heater or unsafe operation, and will void warranty.**

IMPORTANT: *For either horizontal or angle mounting, the long axis of the heater must be level. Use only non-combustible mounting hardware. Diagram 2 on Page 5 illustrates typical suspension hardware that may be used., and provided by Schwank as an optional component.*

7. GAS SUPPLY PIPING

- All piping must be installed according to applicable local and national codes
- A listed flexible connector (field supplied) must be installed between the heater and gas supply piping. For outdoor installation the connector must be in compliance with ANSI Z21.75 / CSA 6.27. A 1/2" x 24" stainless steel flexible gas connector (JL-0771-XX - approved Indoor/Outdoor) is available as an option from Schwank / InfraSave.
- A drip-pocket must be provided at the inlet connection
- Provide a 1/8" NPT plugged tapping, accessible for test gage connection, immediately upstream of the gas supply connection to the heater.
- On propane-fired units, a main line filter is recommended (field supplied)
  - Piping joint compounds must be resistant to the action of liquefied petroleum gases
- All piping joints must be tested for leaks with a soap and water solution.

CAUTION: *DO NOT INSTALL ANY GAS PIPING IN HEAT ZONES*

7.1 GAS PRESSURE

The maximum supply pressure must be limited to 14"w.c. (0.5 psi). If the line pressure is above 14"w.c., then a separate pressure reducing regulator must be installed in the gas supply. The minimum pressure at the inlet to the heater regulator (gas valve) must be equal to or greater than 6.0"w.c. for natural gas and 11.0"w.c. for propane gas.
Proper manifold pressure must be adjusted during commissioning, and will be maintained when the main burner is operating under the following supply pressure:

Table 4

		LINE PRESSURE "w.c.		MANIFOLD PRESSURE "w.c.
MODELS	GAS TYPE	MINIMUM	MAXIMUM	AT GAS VALVE TEST PORT
2135/50; IO-135/150	NATURAL GAS	6.0	14.0	5.0
2152 / IO-152 (2-Stage)	NATURAL GAS (ONLY)	6.0	14.0	5.0 High; 3.0 Low
2135/50; IO-135/150	PROPANE GAS	11.0	14.0	10.0

Natural Gas: Orifice sized for 1000 BTU/CU.FT.
Propane Gas: Orifice sized for 2500 BTU/CU.FT.

8. ELECTRICAL REQUIREMENTS - see also Wiring Diagrams pages 31 - 32

All electrical installations must meet local codes and the latest edition ANSI/NFPA N0 70 in the U.S.A. and Electrical Code PART 1 CSA C22.1 in Canada .

TRANSFORMER SPECIFICATIONS (field supplied)

Single heater requires 24 Volt, 60 Hz electrical transformer sized at 40 VA.

Multiple heaters in a zone are powered by a single transformer (field supplied). The proper transformer is 24 Volt AC, 60 Hz, sized at 40VA for the first heater plus 20VA for each additional heater in the zone - round up the calculated value to the next higher available sized transformer. For example, four heaters in a zone require a transformer of : 1 x 40VA + 3 x 20 VA = 100 VA .

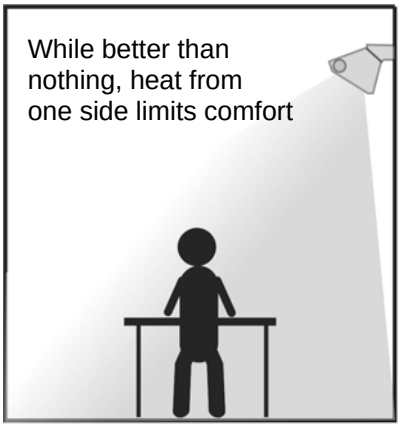
PROPER WIRING POLARITY MUST BE MAINTAINED, particularly when grouping the heaters in a zone. Total wiring distances of up to 200' must use minimum 16 gauge electrical wire, and wiring distances of over 200' must use minimum 14 gauge electrical wire. The heater must be electrically grounded in accordance with local and national electrical codes. Malfunction of the heating system will result if the voltage varies by more than ±10% .

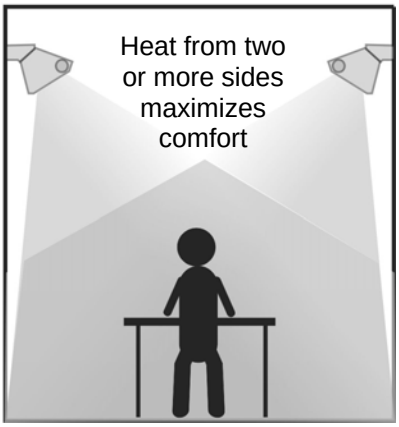
The heater can be controlled by a line voltage thermostat, a 24 volt thermostat or “off-on” switch. Total load of all heaters must be considered in determining the required contact rating of the controlling thermostat or switch.

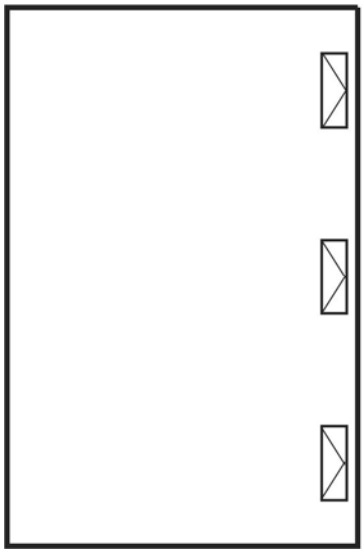
9. LAYOUT, COMFORT & CONTROL

NOTE: MOUNT HEATER AT MAXIMUM 30° ANGLE TO AVOID DAMAGE

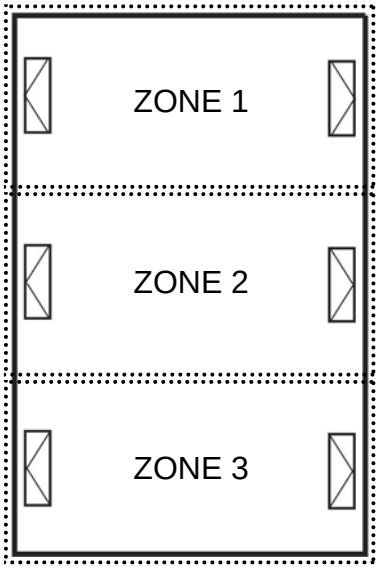
Every patio heater layout is unique. Where possible it is recommended that heaters on opposing sides (two or more sides) of a patron or heating zone be activated simultaneously to accomplish highest comfort level.



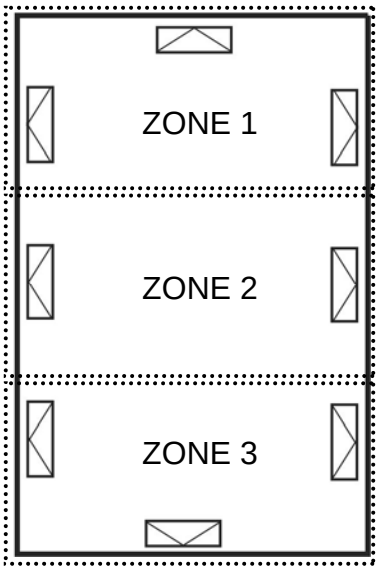




One Side Heating - Limited Comfort Coverage



Better: Two Sides Heating - Improved Comfort



Best: Multi-Side Heating - Most Uniform Comfort

Heater/Zone Control Options: Locate controls in a secure staff area.

Single-Stage Models: 2135 / 2150; IO-135 / IO-150

- On/Off power switch
- patioControl Panel: Manual control by staff; JM-0204-NT up to 4 heater zones; JM-0208-NT up to 8 heater zones; JM-0212-NT up to 12 heater zones
- Wireless remote control: *refer to section 15 page 23*
- ThermoControl Plus: Radiant temperature control of the zone system

Two-Stage Model: 2152; IO-152

- Two-Stage patioControl Panel: Manual control by staff; JM-2204-NT-2 up to 4 two-stage zones; JM-2208-NT-2 up to 8 two-stage zones; JM-2212-NT-2 up to 12 two-stage zones
- ThermoControl Plus: Radiant temperature & staging control of the zone system

10. INSTALLATION PROCEDURES

- Install gas and electrical supplies according to all local and national codes
- Mount heater **up to a maximum of 30° angle on short axis** using non-combustible mounting hardware. Refer to pages 9 to 13 in this manual for information on mounting options.
- Observe all minimum clearances as indicated in Table 1 and Figure 1
- Suggested mounting distances for comfort in Table 2 and Figure 2 are guidelines based on experience. Site conditions can allow for some deviation from these distances.

WARNING: *When using Wall Mounting Bracket JP-2100-MB, or Arm Mounting Bracket JP-2300-MK, ensure that anchoring to the structure is of sufficient strength, integrity and workmanship, to support the weight of the heater and any additional loads such as wind and snow.* ***Mount heater up to a maximum 30° angle****.*

- If possible heat from two or more sides of control zones to provide most uniform comfort
- Connect heater to the main gas line. An approved 1/2" flexible connector (field supplied - available as an option from the manufacturer) may be used to absorb heater and gas line expansion and any vibration - check local code requirements.
- Check gas line for leaks by using soap test or gas meter test. Ensure gas pressure meets the requirements outlined in Section 7.1 (above).

WARNING:

When testing the main gas line pressure up to 0.5 psig, ensure that the isolation valve and combination gas valve are "OFF", otherwise damage to the combination gas valve will result. When testing main gas line in excess of 0.5 psig the appliance and shut off valve must be disconnected or isolated from the gas supply piping system during any such pressure testing. Gas supply to the heater must be regulated to be maximum 0.5 psig (14"w.c.) and minimum values listed in Table 3 above in Section 7.1

- All wiring must comply to local and national codes. The heater requires 24Vac power supply. The heater system zone requires a field supplied 120/24Vac transformer rated at 40VA for the first heater *plus* 20VA for each additional heater in the zone. Ensure proper electrical rating in the system by checking voltage at ignition module terminals. To avoid system malfunction, the voltage must be within 10% of required 24Vac (21.6 Volts to 26.4 Volts), and correct polarity must be maintained throughout the system.
- Test-fire heating system - follow lighting instructions listed below and/or on the heater label.

11. LIGHTING INSTRUCTIONS

1. Ensure the correct voltage is supplied, gas supply lines have been properly purged, and gas valve is switched to the ON position.
2. Turn on power to heater (high or low rate for 2-stage heater), set thermostat (if applicable) to above ambient temperature, the heater will light.
3. If heater does not light: Turn off power to heater, turn gas valve to OFF position.
4. Wait for five minutes and repeat steps above. If heater does not light after three attempts, call a qualified service technician.

11.1 SHUT DOWN INSTRUCTIONS

a) For temporary shutdown, turn off the electrical circuit.

b) For complete shutdown, turn off the electrical circuit and turn gas control knob to the "OFF" position.

12. HEATER FINISH AND APPEARANCE

Stainless Steel Heater: ALL stainless steel heaters will discolor or stain to some extent due to the impact of heat. This is a normal occurrence and does not effect heater performance or the warranty of components.

Paint Finished Heater: Exterior heater surfaces, including any stainless steel components, are coated with a black high emissive coating that helps preserve the aesthetic appearance of the heater and improves the radiant heat output.

Handle the heater with care during installation and service to avoid scratching or damaging the finish.

With extended use, the finish coat will discolor and deteriorate to some extent due to the impact of heat, the deposit of ambient air born particles, and environmental factors.

These are normal occurrences caused by heat, products of combustion, and the environment, and in no way affect the operation / performance of the heater or the manufacturer's warranty.

OCCASIONAL PAINT FINISH MAINTENANCE:

Wear protective gloves, eyewear, and breathing mask. Ensure that power to the heater is disconnected prior to maintenance and the application of any finish coating. Use a fine steel wool to remove blemishes or unsightly deposit, and smooth the outer surface. The heater finish coat can be touched up using a high temperature coating such as Thurmalox Stove Paint - Flat Black-1200°F (650°C) or similar high temperature stove paint that is compatible with the original finish. **No other coating or non-high-temperature paint finish may be applied to the heater – use of an incompatible finish coating will create a hazardous condition such as fire or noxious fumes, damage the heater, and void the warranty.**

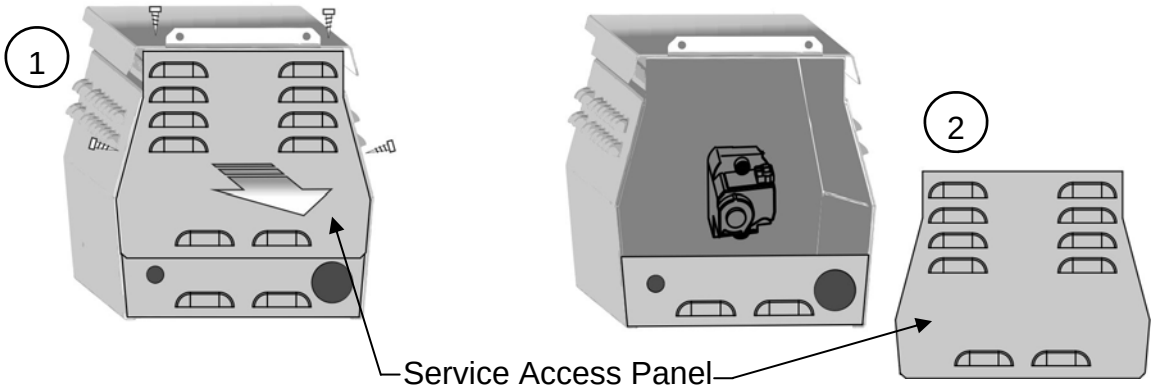
Apply the touch up finish with the heater in its operating orientation (facing down). Ensure that overspray does not reach or effect the egg crate grilles and the burner tile surface - mask the heater grilles during any re-finishing. Remove the masking immediately after re-finish and prior to operation of the heater.

13. SERVICING GUIDE (Also refer to Troubleshooting Guide on page 30)

Servicing of heater is essential for continued efficient operation. Servicing should be carried out annually by a qualified gas service technician as follows:

- Clean the ceramic tiles with compressed air. Avoid directing air stream at gasket material between tile and heater body. The air pressure **must be lower than 20 psig.**
- Clean venturi tube with compressed air. The air pressure **must be lower than 20 psig.**
- Ensure gas orifice is clean and the heater cabinet is free of any debris

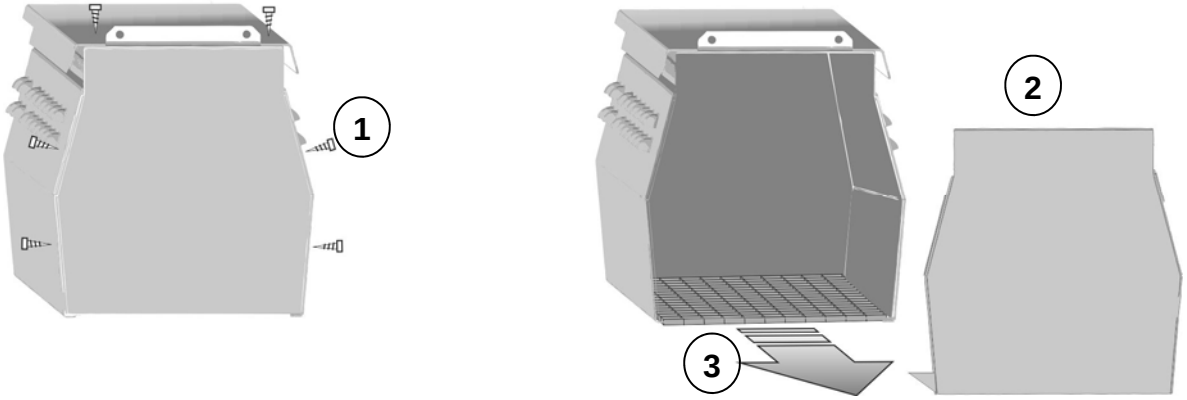
Service Access - Electrical & Gas Components



Handle parts carefully to avoid scratching or damaging the surface finish:

1. Remove four sheet metal screws that hold the service access panel in place
2. Remove service from heater assembly
3. Component parts are accessible for service
4. Reassemble access panel to heater after service

Service Access - Burner & Ceramic Tiles



Handle parts carefully to avoid scratching or damaging the surface finish:

1. Remove six sheet metal screws that hold burner end plate in place
2. Remove end plate from heater assembly
3. Slide screen frame from heater assembly
4. Burner assembly is accessible for service
5. Reassemble after service

Indication of back firing:

- *Loud ignition noise, followed by distinct hissing sound.*
- *Little or no visible burning on the ceramic tile surface.*
- *Combustion is taking place inside the burner body.*

WARNING: *If heater backfires during operation, it **must** be turned off **immediately**.*

Cause & remedy of back firing:

- *Improper gas pressure entering the venturi tube: check gas supply pressure.*
- *Damage of a ceramic tile and or gasket: - replace damaged part.*
- *Faulty sealing of the ceramic tile to the burner body, caused by damaged gasket material: contact your local distributor or contractor.*

14. VENTILATION REQUIREMENTS FOR INDOOR APPLICATION

Inadequate venting of a heater may result in asphyxiation, carbon monoxide poisoning, injury or death. Heating system ventilation must be in accordance with all local, state, provincial, and national codes (ANSI Z223.1/NFPA 54 in USA; B149.1 in Canada).

This heater is approved for unvented (indirect venting) application. Ensure that there is adequate ventilation to supply combustion air and to dilute the products of combustion in accordance with all local, state, provincial, and national codes. A balanced exhaust / inlet air system is required to ensure that a negative air condition is not created. See below for a summary of exhaust capacity requirements by the national codes in the U.S.A. and Canada.

Air Supply: A “loose” building may not require any additional air supply if infiltration rates are sufficient to offset exhaust volume. However, for “tighter” buildings, or if air movement is stagnant in an area, air can typically be supplied via inlet(s) with an area of 1 sq. in. per 1,000 Btuh input (22 sq cm per kW). Locate air inlet(s) up at the level of the heaters to avoid cold drafts at work level, and effectively supply combustion and dilution air to the heaters and balance the system.

Heater Zoning: Exhausters are sized according to the input requirements of each controlled zone of heaters. Multiple smaller zones are usually more effective in both comfort and ventilation control than one large zone. Maximum zone size is limited by the total input that can be handled by the capacity of an exhauster, and by the proximity of the exhauster to heaters in the zone.

Exhauster Location & Proximity: Exhaust must be located as high as practicable in the structure above the level of the heater(s) to effectively dilute and remove the warm (rising) products of combustion. The exhauster should be as centrally located as practicable in the zone of heaters. Schwank recommends a maximum 6:1 ratio of the horizontal distance between the exhauster and the furthest heater in a zone, to the height the heaters are mounted

above the floor . For example, if heaters are mounted 20 ft above the floor, then the exhaust fan should be located no more than 120 ft from the furthest heater in the zone. Sufficient air supply must be provided.

Exhauster Capacity:

USA: Natural or mechanical means shall be provided to supply and exhaust at least 4ft^3/min/1000Btuh (0.38m^3/min/kW) Natural Gas input of installed heaters [4.5ft^3/ min/1000Btuh (0..43m^3/min/kW) Propane input]. Some local codes may require an interlock to a dedicated exhaust fan. Consult your local code and ANSI Z223.1 latest edition for all venting requirements and practices.

Canada: It is required that the heater(s) be electrically interlocked to dedicated exhaust fan(s) by means of an Air Proving Switch. Exhaust fan(s) must be sized to create 300 cfm (8.5 cu m/min) exhaust for every 100,000 Btuh (30 kW) or any portion thereof of total input of installed equipment. Provide combustion and ventilation air supply compatible with exhaust volume . Consult the latest edition of CSA.B149.1 Section 7.22.

15. REMOTE CONTROL OPTION *(Single-Stage Models ONLY)*

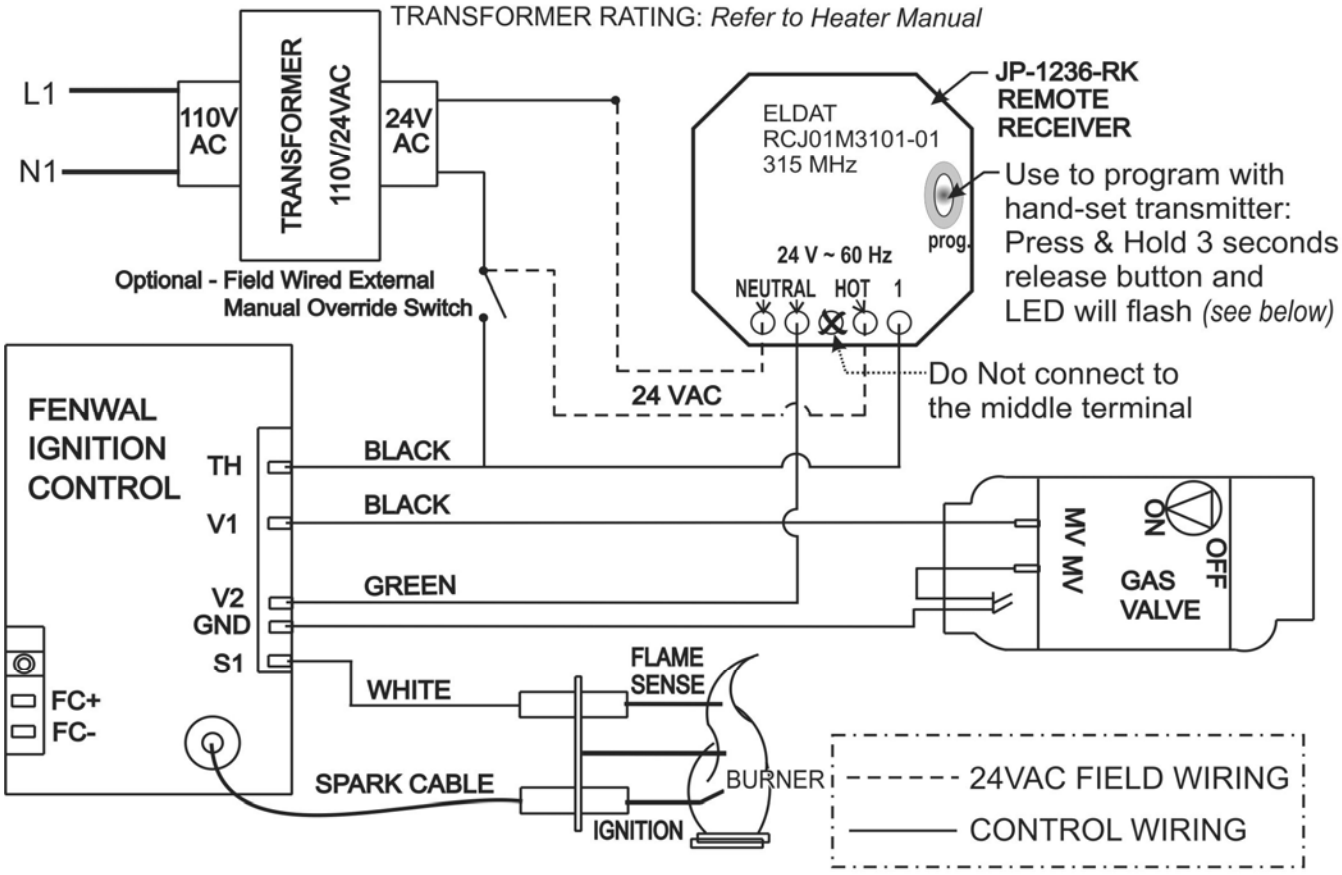
Patio Heaters can be operated using a portable Remote Control Option:

- JP-1236-RK Remote Receiver Kit (field installed in the heater)
- JP-1236-HS Remote 4-Button Handset Transmitter
    - The Handset Transmitter is the master component for system setup and operation. It is recommended to have a backup/spare “twin” handset transmitter in case one is misplaced
    - Handsets plug together to “twin” a backup handset with the same codes as master
    - In the event of any concern for breach of control security (lost handset), master codes can easily be changed in existing handset(s) on site
    - Unique random signal codes ensures no interference with any neighboring systems
- JP-1236-KT Wireless Keypad Transmitter (wall mounted at patio)
    - Control up to four heater zones using unique PIN’s
    - Requires a Handset Transmitter as master code controller
- Quick Setup instruction sheets accompany the Remote Receiver Kit and the Handset Transmitter for installation and programming of the system.

Layout and Control:

- Each heater requires its own receiver (JP-1236-RK)
- Each handset transmitter has 4 channels and can control up to 4 individual heat zones
- Multiple receivers can be programmed to one common transmitter channel (button)
    - Multiple heaters can be simultaneously activated in one heating zone with one transmitter button
- If more than 4 heating zones are required, then more than one master handset transmitter

JP-1236-RK REMOTE CONTROL RECEIVER KIT
Quick Setup & Installation 2100/IO-100 SERIES *(Single-Stage Models ONLY)*



- Hand-set transmitter has 4 buttons to control up to 4 heat zones
- Any number of receivers can be programmed to operate with the same transmitter button
- The number of heaters in any individual zone (one transmitter button) will depend on the comfort zoning requirements of the particular patio
- Refer to section **13: Servicing Guide** for access to heater control compartment
- Connect Green lead from **V2 GND** terminal at Ignition Control to **Neutral** terminal at receiver
- Connect Black lead from **TH** terminal at Ignition Control to terminal marked "**1**" at receiver
- Connect 24 Vac power supply to other **Neutral** and the **Hot** terminal (beside **1**) of the receiver
- Turn on 24 Vac power supply to receiver
- Program receiver to hand-set transmitter:
  - Each hand-set transmitter button controls both "ON" and "OFF" functions
  - Press and hold the receiver "**prog.**" button for 3 seconds
  - Release the "**prog.**" button - LED will begin to flash for a period of about 10 seconds
  - Within the 10 second flash period press and hold the appropriate transmitter button (1 of 4)
  - As soon as the transmitter button code is transferred the receiver LED light will remain lit
  - Release the transmitter button and wait a couple of seconds until "**prog.**" LED light turns off
  - Test receiver operation "ON" & "OFF" - only a quick push of transmitter button is required
  - Repeat set up of other receivers to the hand-set transmitter button(s)
- Install Velcro patch (supplied) to the back of the receiver - mount to an inside surface of control enclosure

Handset Transmitter *Single-Stage Models only*

Instructions model: M3-2314; Part Number: JP-1236-HS

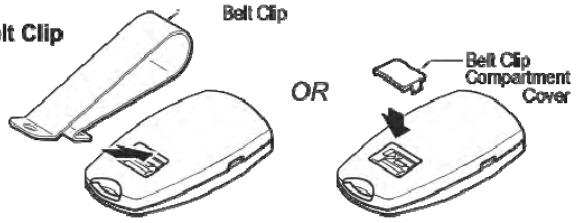
FEATURES

This state-of-the-art 4-channel hand-set transmitter is custom encoded to be an integral part of your patio heating control system.

1. Hand-set Transmitter Overview

- The transmitter has 4 buttons, each with a unique random code to control up to 4 heating zones.
- Each heater must have it's own receiver that is programmed to one of the transmitter buttons.
- Multiple receivers can be programmed to the same transmitter button, so any number of heaters can be in a heating zone.
- If a master transmitter is lost: For security reasons, any back-up transmitter can have the random codes changed for each button, and then reprogram the heater receivers.
- The hand-set transmitter comes with the battery installed.
- Also supplied are a belt clip, clip compartment cover, and a programming connector *(see section 5 below)*

Figure 1. Belt Clip



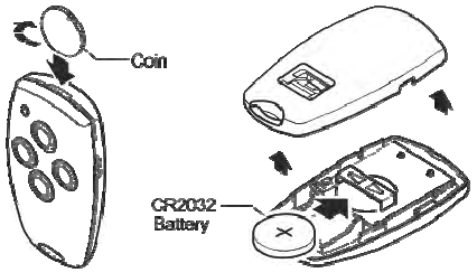
2. Transmitter Belt Clip

The belt clip allows for easy carrying of the transmitter and/or enables clipping of the transmitter in a storage location.

- Snap belt clip into back of transmitter as shown in Figure 1.

Note: If you do not need the belt clip, install the belt clip compartment cover.

Figure 2. Battery Compartment



3. Battery Replacement

When replacing batteries follow the steps below:

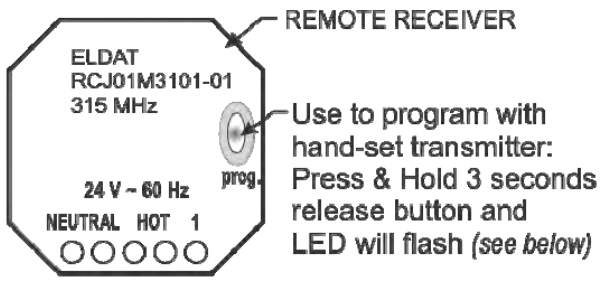
- Open the transmitter case using small coin.
- Insert a 3V battery (type CR2032) as shown.
- Close the transmitter.

Note: Replace batteries with same type CR2032 only.

4. Programming a Receiver

- NOTE: Receiver must be installed in heater and 24Vac power supplied for programming to occur
- Press and hold the **prog.** button on receiver for 3 seconds
- Release the **prog.** button - LED will flash for about 10 seconds
- During the 10 second flash period, press and hold the desired control button on the hand-set transmitter
- As soon as the transmitter button code is transferred the receiver LED light will remain lit
- Release the transmitter button and wait a couple of seconds until **"prog."** LED light turns off
- Test receiver operation "ON" & "OFF" - only a quick push of transmitter button is required
- Repeat set up of other receivers to the hand-set transmitter button(s)

Figure 3. Programming a Receiver


REMOTE RECEIVER
ELDAT
RCJ01M3101-01
315 MHz
prog.
24 V ~ 60 Hz
NEUTRAL HOT 1
Use to program with hand-set transmitter: Press & Hold 3 seconds release button and LED will flash (see below)

Handset Transmitter *Single-Stage Models only*

Instructions (continued)

5. Multiple Transmitters

Each transmitter comes factory programmed with 4 random codes, one per button.

Any other transmitter has 4 different unique random codes.

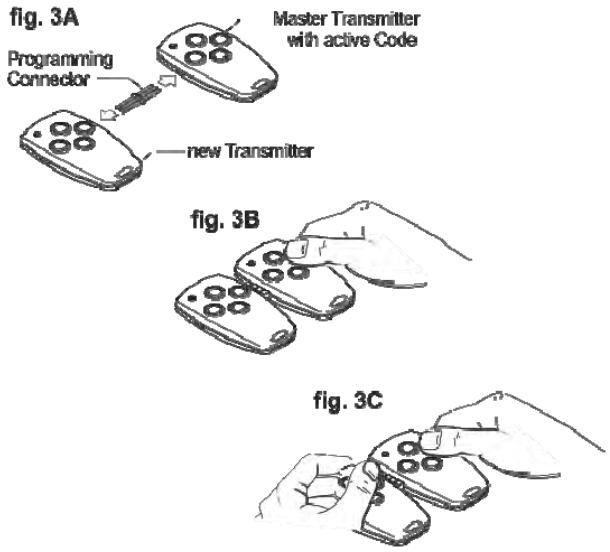
The first transmitter that is used to program the active codes into heater receivers acts as the "master" transmitter.

Any additional transmitter that is purchased to operate the same heaters (receivers) must have the master codes transferred from each button on the master transmitter to the respective button on the new/additional transmitter.

It's a simple and straightforward procedure:

- Connect the master transmitter with active code to the new transmitter using the programming connector (fig. 3A).
- Press and hold a selected channel button on the master transmitter with the active code (fig. 3B). The light on the transmitter illuminates.
- Press and hold the respective channel button on the new transmitter (fig. 3C). The light on the transmitter initially starts blinking and then illuminates continuously after 1-2 sec. Code transfer is completed between those buttons.
- Repeat above procedure for each active button.
- Programming connector can be removed and both transmitters are now active masters that can operate the heaters.

Figure 3. Multiple Transmitters-Code Transfer



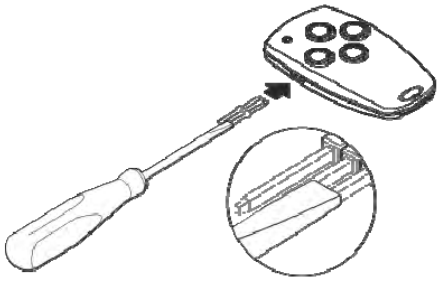
5. Changing the Code on a Transmitter

If you lose a transmitter, there may be concern that an unauthorized person who finds it could now activate your system.

To create a new 'master' transmitter using an existing back-up transmitter, the factory preset codes can be changed as follows:

- Connect the programming connector into one of the side sockets of the transmitter.
- Short one of the outer pins of the programming connector with the middle pin.
- Press and hold the respective channel button. The light will blink rapidly for approx. 3 to 5 seconds. Release the button after the light illuminates continuously.
- Repeat the process for each active channel button. Then remove the programming connector.
- The heater receivers will now need to be reprogrammed to the new master transmitter codes.

Figure 4. Code Changing



FCC Certified: This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user´s authority to operate the equipment.

Wireless Keypad Control *Single-Stage Models only*

Note: Refer to Receiver & Handset Instructions for programming the system

A Handset Transmitter is the "master control" in the remote control system, first required to establish codes that operate the remote receivers installed in heaters. System control codes must be transferred to the Keypad Control from the master Handset Transmitter. Remote Receivers and Handset Transmitters are purchased separately.

FEATURES

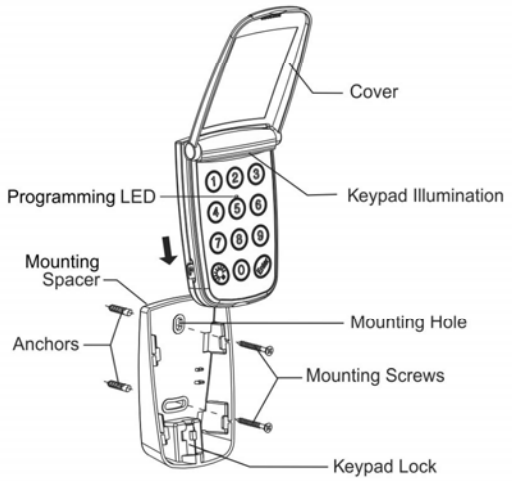
The Wireless Keypad Control System offers the convenience of remotely controlling the operation of patio heaters by entering unique 4-digit Private Identification Numbers (PIN) via the keypad. It can be programmed to control up to 3 heating zones by programming a unique PIN code for each zone.

A fourth heater zone can also be programmed for simple control without a PIN using the "Light" key.

Other Features Include:

Wireless Installation, Code Security, Anti-Tampering, and Weather Resistant Design for outdoor (or indoor) installation.
Familiarize yourself with the parts shown in Figure 1.

Figure 1. Keypad Control System Mounting



Step 1: Setting Up Your Private Identification Numbers (PIN) and Transferring Codes (Fig. 2)

To Transfer Control Codes to the Keypad from a Handset Transmitter:

- The Keypad Control can control 3 heater zones using 4-digit PINs, and a 4th zone using the "Light" key. Simple PINs that relate to the heater zones are recommended for staff to remember easily. Record the list of heater zones and associated PIN/Light key, and keep it in a secure place.
- Open the code transfer terminal area (Fig. 2a - lower left side) and connect the Handset Transmitter to the Keypad Control using the 3-pronged Code Transfer Connector.
- Press and hold one of the transmitter buttons on the Handset.
- On the Keypad Control press the ENTER key - keypad illuminates
- Input any new 4-digit PIN of your choice. Press ENTER again.
- Continue holding the Handset button until the LED (above the "5" key) on the Keypad blinks rapidly, then release the Handset Button.

Figure 2. Code Transfer: Handset to Keypad

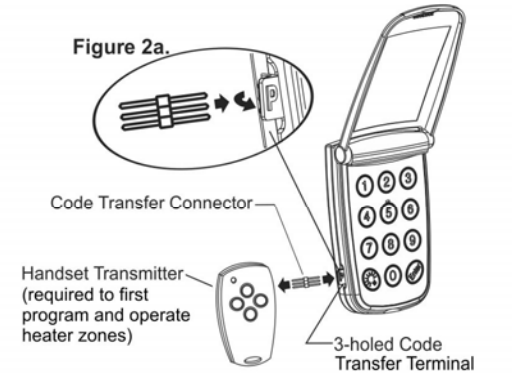


Figure 2a.
Code Transfer Connector
Handset Transmitter (required to first program and operate heater zones)
3-holed Code Transfer Terminal

- The Keypad Control has now learned the code from that Handset button and stored it under the PIN that you entered.
- Repeat the above procedure for up to two more handset Handset buttons, programming each with a unique PIN.

To transfer a Handset Code to the "Light" key *(Handset remains connected to Keypad with Code Transfer Connector)*

- Press and hold the Handset button (heater zone) you choose to assign to the "Light" key.
- Press the ENTER Key on the Keypad . The keypad illuminates.
- Press the "Light" key. Press the ENTER key again.
- Continue holding the Handset button until the LED on the Keypad blinks rapidly.
- The Keyless Entry System has now learned the new code for the "Light" key from the transmitter.

- Close the Keypad cover, remove the Code Transfer Connector, store in a secure place along with a list of heater zones and PIN's.

- **REFER TO STEP 3 BELOW FOR KEYPAD CONTROL OPERATION -**
  NOTE: To activate a heater zone, <u>PIN entry must be followed by the ENTER key</u>

Wireless Keypad Control *Single-Stage Models only*

Instructions (Continued)

Step 2: Mount the Keypad (Figure 1)

- Choose location for mounting your Keypad Control.
- Using mounting holes at top and bottom of the mounting spacer as a guide, mark hole locations and then drill two 1/8" pilot holes.
- Secure spacer to the mounting surface with the (2) 1/8" x 1-3/8" screws provided. For mounting surfaces that are not made of wood, alternate anchoring means may be needed.
- Snap the Keypad Control into the spacer.
- Turn the Keypad Lock on the bottom of the spacer clockwise using a coin to lock the Keypad into the mounting spacer. **Remember to unlock the Keypad to remove it in future.**

Step 3: Using Keypad Control

Familiarize all staff members with these procedures

Switching On the Keypad Illumination

- Press the LIGHT key. The keypad illumination turns on for 5 seconds.

Turning a Heater Zone "ON/OFF": PIN + Enter key

PLEASE NOTE: High intensity (ceramic burner) type heaters will ignite in seconds, and reach full IR output within 5 minutes. Tube type heaters, have a built in pre-purge that delays ignition for 30 seconds after turning 'On'. A tube heater reaches full IR output in 15 to 20 minutes.

- **Enter a 4-digit PIN** (programmed in Step 1) **then press the ENTER key**. Heater ignition sequence will begin in the zone associated with that PIN.
- Keypad Control will remain active and LED will flash for approximately 18 seconds after pressing the ENTER key. During this time, the heaters can be stopped by pressing any button (except the LIGHT button).
- **IMPORTANT**: **Wait 18 seconds until the LED stops flashing before entering the PIN to activate another zone of heaters.** When the LED is no longer flashing, enter the unique PIN + ENTER for the next heater zone.
- Repeat the PIN + ENTER key sequence to turn "Off" a heater zone. Wait 18 seconds between zone shut-downs.

Note:

If an invalid PIN is entered 3 times in a row, the Keypad Control automatically shuts off to prevent tampering or unauthorized use. After 2 minutes, the Keypad Control is active again.

"Light" function to switch a heater zone "ON/OFF"

- To turn a heater zone "On", **press the "Light" key followed by the ENTER key**.
- Repeat the key sequence to turn "Off" a heater zone

Changing a PIN

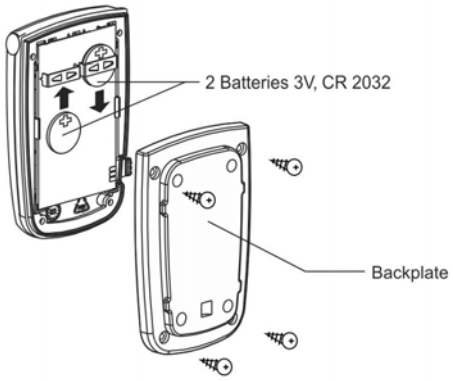
- Press and hold "key 0" on the keypad for 3 seconds until the LED on the keypad blinks rapidly.
- Enter the PIN which is to be changed (erased) followed by the ENTER key.
- Enter the new 4-digit PIN followed by the ENTER key. The LED on the keypad will turn on (not flash) for 2 seconds.
- The Keypad Control is now ready for use again with the new pin (Old PIN is erased and no longer valid).

Clearing the Memory

- This procedure is required if a new master handset and codes are set up for system control.
- Press and hold the LIGHT key on the keypad for 3 seconds until the LED on the keypad blinks rapidly.
- Enter the PIN 9-9-9-9.
- Release LIGHT key. The code memory is cleared. The LED on the keypad will illuminate for 2 seconds.

Battery Replacement (Figure 3)

Figure 3. Battery Replacing



- Always replace BOTH CR 2032 batteries.
- During battery replacement, the Keypad will remember the programmed codes and PINs.
- Use a coin to turn the lock key on the bottom of the spacer counterclockwise and remove the Keypad from the spacer.
- Release the backplate of the Keypad (4 Phillips screws).
- Remove old batteries.
- Install 2 new 3V batteries, CR 2032. Match polarity designation. Test operation.
- Reinstall the backplate on Keypad, and Keypad to spacer.

For protection of keypad, keep cover closed when not in use.

FCC Certified: This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

16. SEQUENCE OF OPERATION FOR FENWAL 35-60 DSI CONTROL

Start up - Heat Mode:

On a call for heat the Fenwal 35-60 control will reset, perform a self check routine, flash the diagnostic LED for up to four seconds. The gas valve and spark are energized commencing the trial for ignition period. When flame is detected during the trial for ignition, spark is shutoff immediately and the gas valve remains energized. The thermostat and main burner flame are constantly monitored to assure the system continues to operate properly. When the thermostat is satisfied and the demand for heat ends, the gas valve is de-energized.

Flame Failure - Multi Trial Model:

Should the main burner fail to light, or the flame is not detected during the first trial for ignition period, the gas valve is de-energized and the control goes through an interpurge delay before another ignition attempt. The control will attempt two additional ignition trials before going into lockout and the valve relay is de-energized.

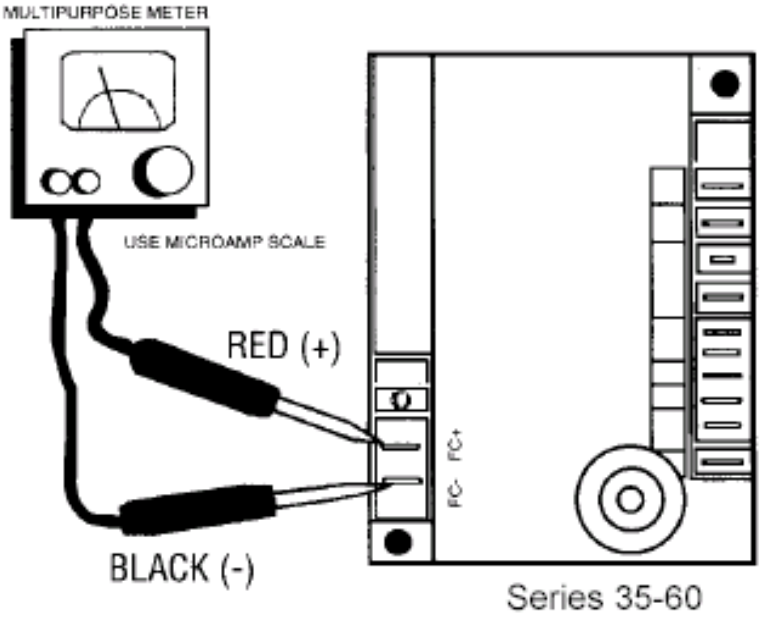
Recovery from lockout requires a manual reset by either resetting the thermostat or removing 24 volts for a period of 5 seconds. If the thermostat is still calling for heat after one hour the control will automatically reset and attempt to ignite the burner again.

Flame Failure - Re-Ignition:

If the established flame signal is lost while the burner is operating, the control will respond within 0.8 seconds. The HV spark will be energized for a trial ignition period in an attempt to relight the burner.

If the burner does not light the control will make two more attempts to relight the burner before de-energizing the gas valve. If the burner does not relight, the control will go into lockout as noted above in “Failure to light”. If flame is re-established, normal operation resumes. Multi-try models will allow three trials for ignition including interpurge delay between trials.

Flame current is the current which passes through the flame from the sensor to ground. The minimum flame current necessary to keep the Fenwal 35-60 system from lockout is 0.7 microamps (µA). To measure the flame current, connect analog DC microammeter to the FC-FC+ terminals.
Meter should read 0.7 µA or higher. If the meter reads below “0” on scale, meter leads are reversed. Disconnect power and reconnect meter leads for proper polarity.



Cautions:

1. The ceramic insulator of the igniter assembly should not be in or close to the flame.
2. The electrode assembly should not be disassembled and care must be used in making minor gap adjustment. The spark electrode should have a gap spacing of 1/8”- 3/16” (3.12± 0.81 mm). If this spacing is not correct, the assembly must be carefully adjusted.
3. Exceeding the temperature limits can cause nuisance lockouts and premature electrode failure.

The control must be secured in an area that will experience a minimum of vibration and remain below the maximum operating temperature of 160°F.

17. SPARK IGNITION CIRCUIT

The step-up transformer in the ignition control provides spark ignition at 30,000 volts (open circuit). To check the spark ignition circuit, proceed as follows.

1 Shut off gas supply to the gas control

2 Disconnect the ignition cable at the ignition control stud terminal to isolate the circuit from the spark igniter or igniter/sensor

3 Prepare a short jumper lead, using heavily insulated wire such as ignition cable

CAUTION

In the next step, DO NOT allow fingers to touch either the stripped end of the jumper or the stud terminal. This is a very high voltage circuit and electrical shock can result.

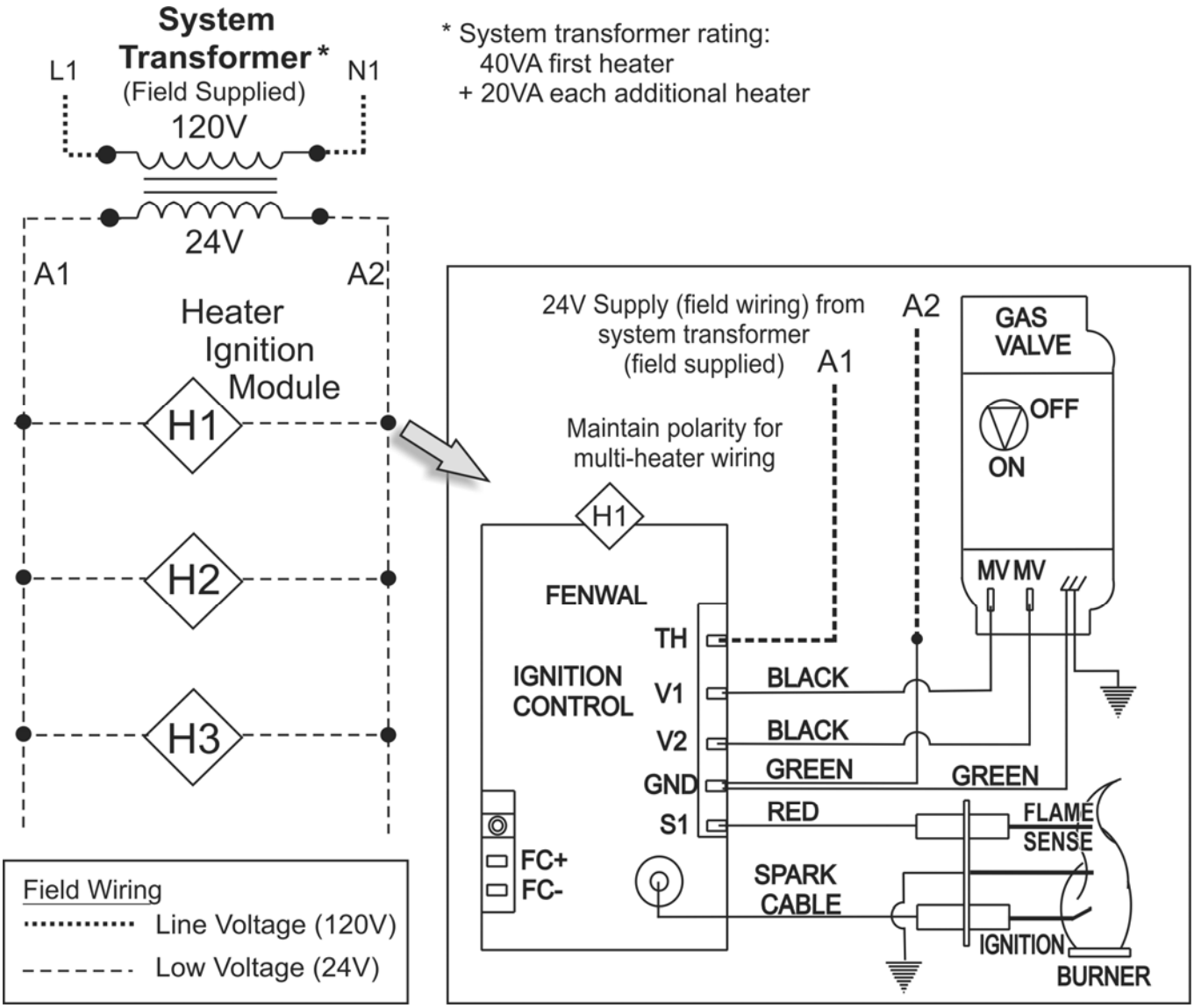
1 Perform this test immediately upon energizing the system before the ignition control goes into safety lockout and interrupts the spark circuit. Touch one end of the jumper firmly to the ignition control GND terminal. (DO NOT remove the existing ground lead.) Slowly move the other end of the jumper wire toward the stud terminal on the ignition control to establish a spark.

2 Pull the wire away from the stud and note the length of gap at which spark discontinues.

3 A spark length of 1/8 in. (3mm) or more indicates satisfactory voltage output. If no arc can be established, or the maximum spark is less than 1/8 in. (3mm), and power to the ignition control input terminals was proved, replace the ignition control.

18-A. WIRING DIAGRAM: 2100 / IO-100 Single-Stage: Fenwal 35-60 DSI

If installing remote control kit JP-1235-RK refer to wiring diagram in the remote control manual



Fenwal Control Terminal Designation	
TH	Thermostat / 24V Supply Input
GND	System Ground
V1	Valve Power
V2	24V Supply Neutral
NC	Alarm
S1	Remote Flame Sensor

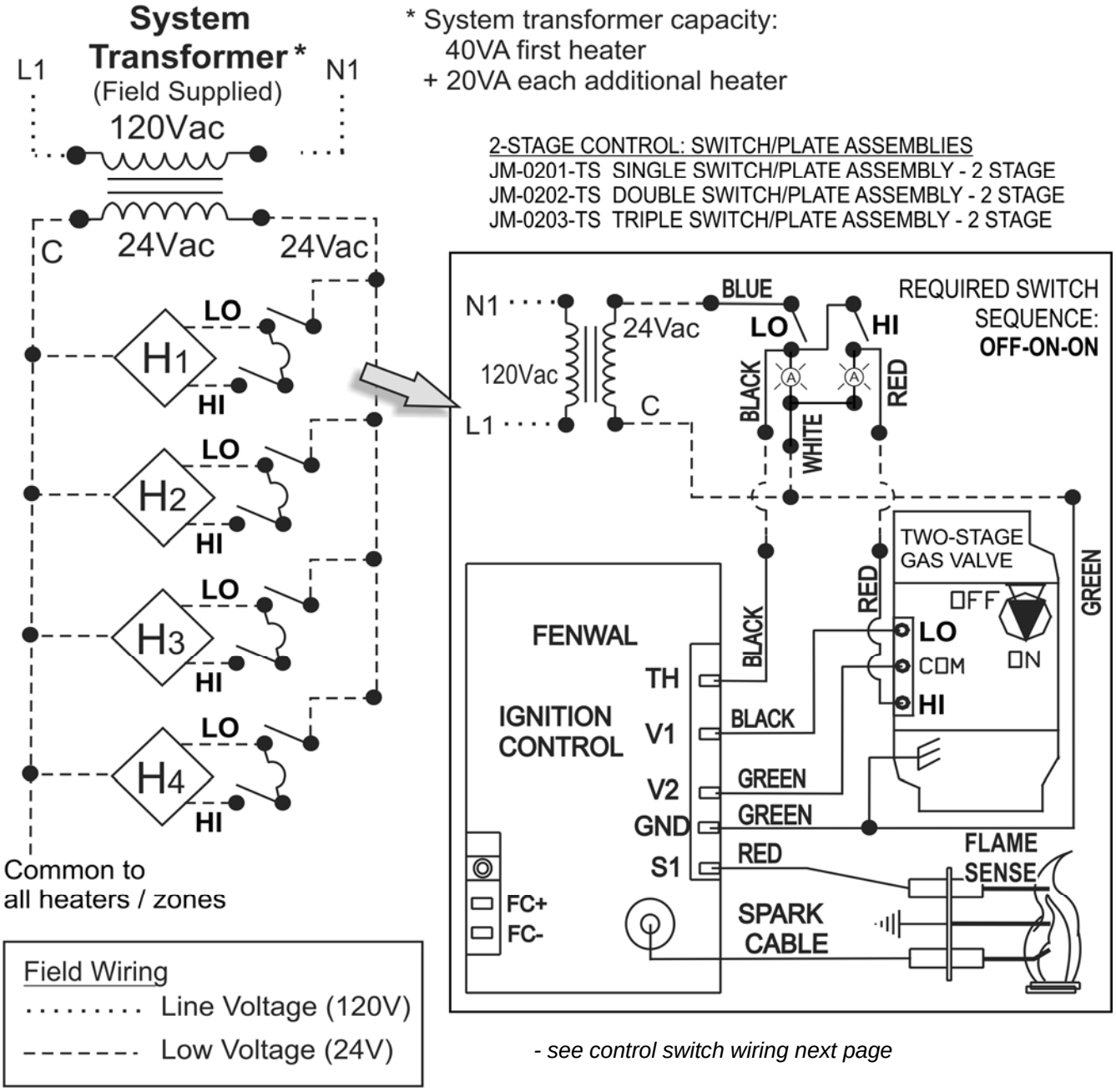
Error Mode	LED Indication
Internal Control Failure	Steady on
Flame with No Call for heat	2 flashes
Ignition Lockout	3 flashes

Fault Conditions:

The LED will flash on for 1/4 second, then off for 1/4 second during a fault condition. The pause between fault codes is 3 seconds.

18-B. WIRING DIAGRAM: 2152 / IO-152 Two-Stage: Fenwal 35-60 DSI

NOTE: LOW STAGE SWITCH MUST BE ACTIVATED FOR HIGH STAGE OPERATION



- see control switch wiring next page

Fenwal Control Terminal Designation	
TH	Thermostat / 24V Supply Input
GND	System Ground
V1	Valve Power
V2	24V Supply Neutral
NC	Alarm
S1	Remote Flame Sensor

Error Mode	LED Indication
Internal Control Failure	Steady on
Flame with No Call for heat	2 flashes
Ignition Lockout	3 flashes

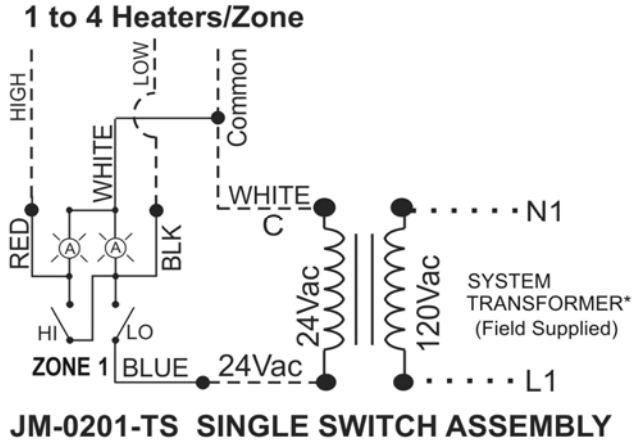
Fault Conditions:
The LED will flash on for 1/4 second, then off for 1/4 second during a fault condition. The pause between fault codes is 3 seconds.

18-C. WIRING DIAGRAM: Two-Stage Switch Control

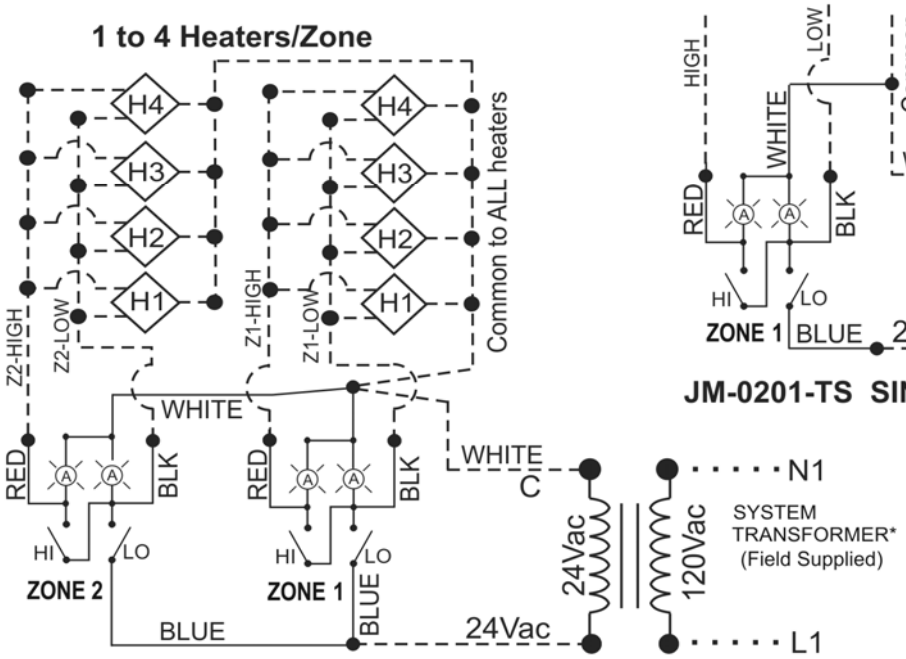
2-STAGE PATIO CONTROL SWITCH ASSEMBLY WIRING

- Control from 1 to 4 heaters in a zone with each switch
- 2-Stage switch sequence required: OFF-ON-ON
- LOW STAGE SWITCH MUST BE ACTIVATED FOR HIGH STAGE OPERATION
- 3-Wire from first switch provides common (24Vac) to all heaters
  2-Wire from additional switches provides low / high stage control

Further information on 2-Stage Control Switches - Page 41

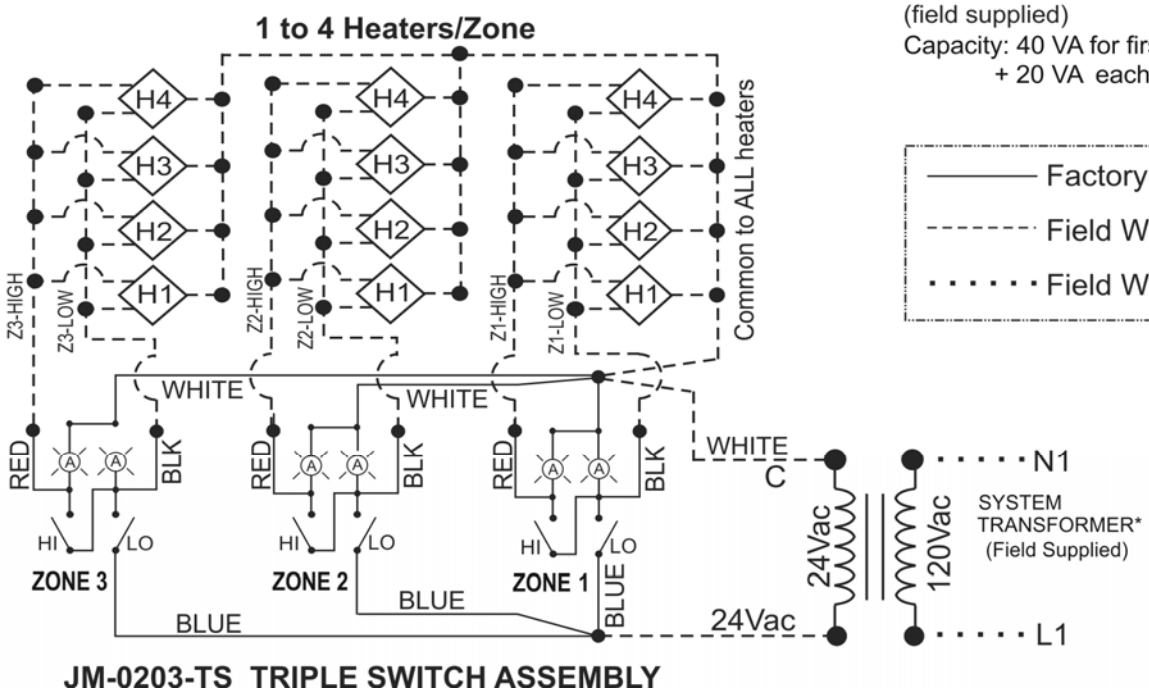


JM-0201-TS SINGLE SWITCH ASSEMBLY



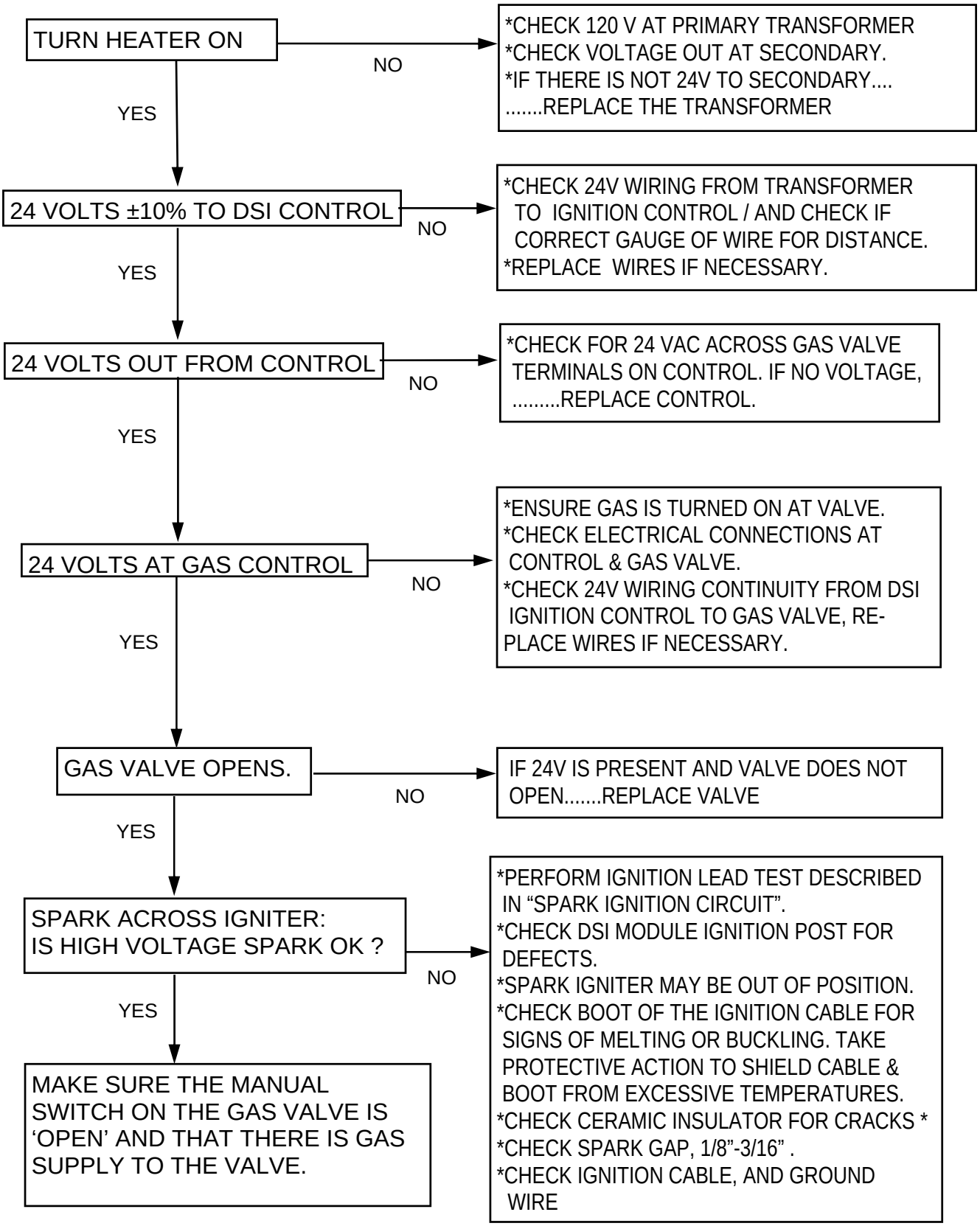
JM-0202-TS DOUBLE SWITCH ASSEMBLY

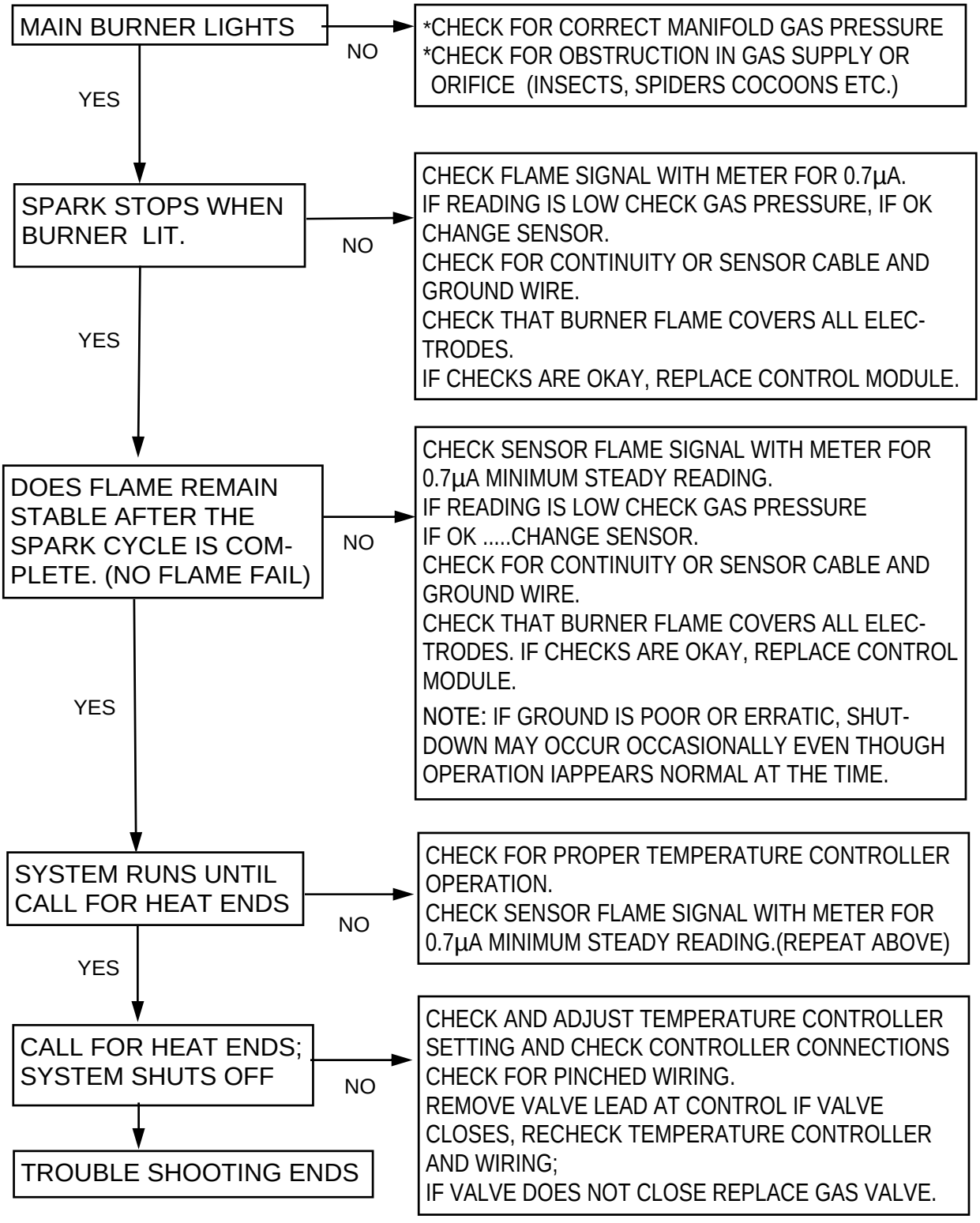
*SYSTEM TRANSFORMER
(field supplied)
Capacity: 40 VA for first heater
+ 20 VA each additional heater



JM-0203-TS TRIPLE SWITCH ASSEMBLY

19. TROUBLESHOOTING GUIDE


TURN HEATER ON
NO
*CHECK 120 V AT PRIMARY TRANSFORMER
*CHECK VOLTAGE OUT AT SECONDARY.
*IF THERE IS NOT 24V TO SECONDARY....
.....REPLACE THE TRANSFORMER
YES
24 VOLTS ±10% TO DSI CONTROL
NO
*CHECK 24V WIRING FROM TRANSFORMER TO IGNITION CONTROL / AND CHECK IF CORRECT GAUGE OF WIRE FOR DISTANCE.
*REPLACE WIRES IF NECESSARY.
YES
24 VOLTS OUT FROM CONTROL
NO
*CHECK FOR 24 VAC ACROSS GAS VALVE TERMINALS ON CONTROL. IF NO VOLTAGE,
.....REPLACE CONTROL.
YES
24 VOLTS AT GAS CONTROL
NO
*ENSURE GAS IS TURNED ON AT VALVE.
*CHECK ELECTRICAL CONNECTIONS AT CONTROL & GAS VALVE.
*CHECK 24V WIRING CONTINUITY FROM DSI IGNITION CONTROL TO GAS VALVE, RE-PLACE WIRES IF NECESSARY.
YES
GAS VALVE OPENS.
NO
IF 24V IS PRESENT AND VALVE DOES NOT OPEN.....REPLACE VALVE
YES
SPARK ACROSS IGNITER:
IS HIGH VOLTAGE SPARK OK ?
NO
*PERFORM IGNITION LEAD TEST DESCRIBED IN “SPARK IGNITION CIRCUIT”.
*CHECK DSI MODULE IGNITION POST FOR DEFECTS.
*SPARK IGNITER MAY BE OUT OF POSITION.
*CHECK BOOT OF THE IGNITION CABLE FOR SIGNS OF MELTING OR BUCKLING. TAKE PROTECTIVE ACTION TO SHIELD CABLE & BOOT FROM EXCESSIVE TEMPERATURES.
*CHECK CERAMIC INSULATOR FOR CRACKS *
*CHECK SPARK GAP, 1/8”-3/16” .
*CHECK IGNITION CABLE, AND GROUND WIRE
YES
MAKE SURE THE MANUAL SWITCH ON THE GAS VALVE IS ‘OPEN’ AND THAT THERE IS GAS SUPPLY TO THE VALVE.


MAIN BURNER LIGHTS
NO
*CHECK FOR CORRECT MANIFOLD GAS PRESSURE
*CHECK FOR OBSTRUCTION IN GAS SUPPLY OR ORIFICE (INSECTS, SPIDERS COCOONS ETC.)
YES
SPARK STOPS WHEN BURNER LIT.
NO
CHECK FLAME SIGNAL WITH METER FOR 0.7µA.
IF READING IS LOW CHECK GAS PRESSURE, IF OK CHANGE SENSOR.
CHECK FOR CONTINUITY OR SENSOR CABLE AND GROUND WIRE.
CHECK THAT BURNER FLAME COVERS ALL ELEC-TRODES.
IF CHECKS ARE OKAY, REPLACE CONTROL MODULE.
YES
DOES FLAME REMAIN STABLE AFTER THE SPARK CYCLE IS COM-PLETE. (NO FLAME FAIL)
NO
CHECK SENSOR FLAME SIGNAL WITH METER FOR 0.7µA MINIMUM STEADY READING.
IF READING IS LOW CHECK GAS PRESSURE
IF OK .....CHANGE SENSOR.
CHECK FOR CONTINUITY OR SENSOR CABLE AND GROUND WIRE.
CHECK THAT BURNER FLAME COVERS ALL ELEC-TRODES. IF CHECKS ARE OKAY, REPLACE CONTROL MODULE.
NOTE: IF GROUND IS POOR OR ERRATIC, SHUT-DOWN MAY OCCUR OCCASIONALLY EVEN THOUGH OPERATION IAPPEARS NORMAL AT THE TIME.
YES
SYSTEM RUNS UNTIL CALL FOR HEAT ENDS
NO
CHECK FOR PROPER TEMPERATURE CONTROLLER OPERATION.
CHECK SENSOR FLAME SIGNAL WITH METER FOR 0.7µA MINIMUM STEADY READING.(REPEAT ABOVE)
YES
CALL FOR HEAT ENDS; SYSTEM SHUTS OFF
NO
CHECK AND ADJUST TEMPERATURE CONTROLLER SETTING AND CHECK CONTROLLER CONNECTIONS
CHECK FOR PINCHED WIRING.
REMOVE VALVE LEAD AT CONTROL IF VALVE CLOSES, RECHECK TEMPERATURE CONTROLLER AND WIRING;
IF VALVE DOES NOT CLOSE REPLACE GAS VALVE.
TROUBLE SHOOTING ENDS

NOTE: IF CONTROL GOES INTO LOCKOUT, THE SYSTEM CAN BE RESET BY INTERRUPTING THE POWER SOURCE

20. COMMISSIONING REPORT

This heater has been factory fired and tested prior to shipment. However, it is not a 'Plug-in' appliance. **Commissioning and field adjustment to correct settings is required.**

COMPLETE THIS COMMISSIONING REPORT AND
FILE THIS MANUAL AT SITE FOR FUTURE REFERENCE

INSTRUCT THE END USER THAT THIS MANUAL MUST BE KEPT SECURE

A QUALIFIED SERVICE TECHNICIAN CALLING FOR TECHNICAL SUPPORT
***MUST* PROVIDE THE INFORMATION FROM THE**
COMPLETED COMMISSIONING REPORT

TECHNICAL SUPPORT: 1-877-446-3727
BUSINESS HOURS: 8:30 a.m. to 5:00 p.m. Eastern time

COMMISSIONING REPORT
AS PER I&O MANUAL AND LOCAL CODES

CONTRACTOR NAME: .....DATE.....

ADDRESS:.....

.....

CITY:.....

PHONE:.....

CELL: .....

JOB SITE.....CITY.....

HEATER MODEL NUMBER:.....

HEATER SERIAL NUMBER: .....

Technical commissioning report continues next page ….

HEATER COMMISSIONING TECHNICAL REPORT

TO BE COMPLETED BY QUALIFIED GAS FITTER INSTALLER

TYPE OF GAS:	NG ☐	LP ☐
IS HEATER EXPOSED TO CHEMICAL OR CORROSIVE ATMOSPHERE:	YES ☐	NO ☐
IS AN OPEN FLAME COMPATIBLE WITH THE INSTALLED LOCATION:	YES ☐	NO ☐
MINIMUM CLEARANCES CONFORM AS PER I&O MANUAL:	YES ☐	NO ☐
IF THIS IS A HIGH ALTITUDE AREA WHAT IS THE ALTITUDE ABOVE SEA LEVEL		☐ Feet
IS HEATER SHORT AXIS HORIZONTAL WITH THE VENTURI ON TOP:	YES ☐	NO ☐
IS GAS SUPPLY LINE ADEQUATELY SIZED FOR SYSTEM VOLUME:	YES ☐	NO ☐
HAVE GAS LINES AND BRANCHES BEEN PURGED OF AIR:	YES ☐	NO ☐
THIS HEATER WAS FIELD TEST FIRED WITHOUT ANY MALFUNCTION:	YES ☐	NO ☐
INLET GAS SUPPLY PRESSURE WITH HEATER OPERATING:	☐	WC"
GAS VALVE OUTLET (Manifold) PRESSURE WITH HEATER OPERATING:	☐	WC"
HAS THE WIRING POLARITY BEEN MAINTAINED THROUGHOUT:	YES ☐	NO ☐
WHAT IS THE VOLTAGE READING AT THE IGNITION MODULE:	☐	VOLTS
WHAT IS THE FLAME SIGNAL STRENGTH IN uA FROM SENSOR:	☐	uA (microamps)
IS THE HEATER CONTROLLED BY A THERMOSTAT:	YES ☐	NO ☐
IS THE THERMOSTAT STRATEGICALY LOCATED:	YES ☐	NO ☐
TOTAL HEATERS SUPPLIED FROM ONE SINGLE TRANSFORMER:	☐	TOTAL
WHAT IS THE RATING OF THE TRANSFORMER IN VA:	☐	V.A.
WHAT IS THE TOTAL LENGTH OF THE LOW VOLTAGE WIRING:	☐	FEET
WHAT IS THE GAUGE OF THE LOW VOLTAGE WIRING:	☐	GAUGE
DOES THE HEATER HAVE GOOD ELECTRICAL GROUNDING:	YES ☐	NO ☐

- **COMPLETE THIS COMMISSIONING REPORT AND FILE THIS MANUAL AT SITE FOR FUTURE REFERENCE**
- **INSTRUCT THE END USER THAT THIS MANUAL MUST BE KEPT SECURE**
- **A QUALIFIED SERVICE TECHNICIAN CALLING FOR TECHNICAL SUPPORT *MUST* PROVIDE THE INFORMATION FROM THE COMPLETED COMMISSIONING REPORT**

21. HIGH ALTITUDE INSTALLATION / DERATION

This heater not to be installed at altitude above 6,800 feet.

USA & Canada: The factory installed orifice for this appliance is approved for altitudes zero to 2000 feet above sea level. When installed above 2000 feet, **refer to information below**.

When this appliance is installed above the standard altitude stipulated the input must be de-rated by 4% for each 1000 ft above sea level. The orifice must be changed according to the chart below - confirm the correct model. Check with your local utility regarding the gas supply and the de-rating of this appliance.

MODEL	FOR USE AT ALTITUDES ABOVE (FEET) Gas Orifice Drill Size[1] / Part #						
	Supplied	USA & CANADA ORIFICE DERATION					
	0	> 2000	> 3000	> 4000	> 5000	> 6000	DO NOT INSTALL AT ALTITUDE ABOVE 6,800 FEET
2135 / IO-135 NG	38 DMS JX-0738-DM	41 DMS JX-0741-DM	42 DMS JX-0742-DM	42 DMS JX-0742-DM	43 DMS JX-0743-DM	43 DMS JX-0743-DM	
2135 / IO-135 LPG	50 DMS JX-0750-DM	52 DMS JX-0752-DM	53 DMS JX-0753-DM	53 DMS JX-0753-DM	53 DMS JX-0753-DM	53 DMS JX-0753-DM	
2150 / IO-150 NG	31 DMS JX-0731-DM	32 DMS JX-0732-DM	32 DMS JX-0732-DM	32 DMS JX-0732-DM	33 DMS JX-0733-DM	34 DMS JX-0734-DM	
2150 / IO-150 LPG	46 DMS JX-0746-DM	48 DMS JX-0748-DM	48 DMS JX-0748-DM	49 DMS JX-0749-DM	49 DMS JX-0749-DM	49 DMS JX-0749-DM	

[1] As per ANSI Z223.1 (NFPA 54)

22. CONTROL ACCESSORIES

Two-Stage Illuminated Switch Gang Assemblies (24Vac capacity):

- One or a combination of these switch gangs is required to control 2-stage heaters

NOTE: Required Switch Sequence Off-On-On is not readily available in the market

- Illuminated switches indicate low or high stage operation at a glance
- Each switch gang controls from 1 to 4 two-stage heaters in a zone
- Combine switch gang assemblies/sizes to achieve optimum control
- Brushed stainless steel switch plates
- Standard electrical box supplied to suit each size
- Factory wired
- *Heater & switch control wiring diagrams - Pages 34 & 35*
- *Field supplied 120/24Vac transformer required upstream of switch gang assembly*

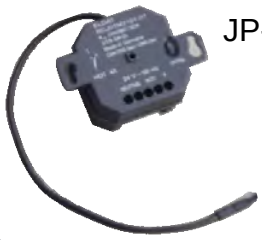
JM-0201-TS Single Switch Gang Assembly:
Control from 1 to 4 Two-Stage Heaters in one Zone

JM-0202-TS Double Switch Gang Assembly:
- Control 2 to 8 Two-Stage Heaters
- 2 Zones with up to 4 heaters/zone

JM-0203-TS Triple Switch Gang Assembly:
- Control 3 to 12 Two-Stage Heaters
- 3 Zones with up to 4 heaters/zone

Remote Control Options: Single-Stage Heaters only - *See details pages 23 to 28*

Order items separately



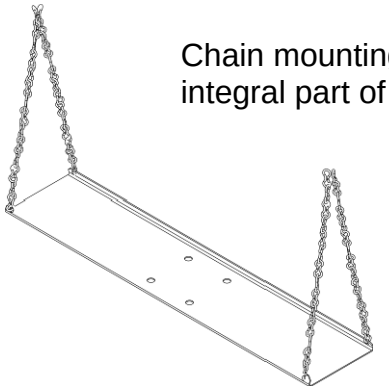
JP-1236-RK Remote Receiver Kit (field installed in heater)

JP-1236-HS 4-Button Remote
Handset Transmitter

JP-1236-KT Wireless Keypad
Transmitter
(wall mounted at patio)

Heater Mounting Hardware Options - *Refer to pages 9 to 13 for details*

NOTE: MOUNT HEATER AT MAXIMUM 30° ANGLE TO AVOID DAMAGE

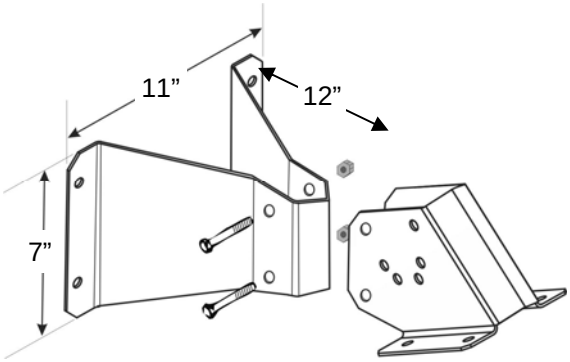


Chain mounting bracket JP-2100-HS is supplied and factory installed as an integral part of the heater.

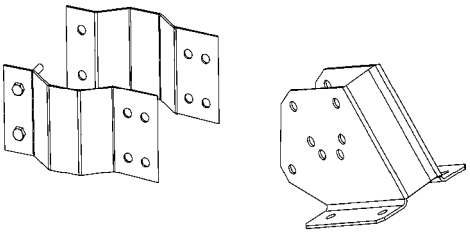
Other optional mounting kits are available:

Kits include hardware to fasten bracket to heater. Hardware to fasten to structure is field supplied.

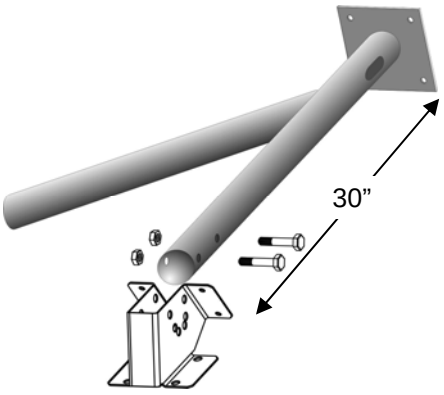
JP-2100-MB WALL MOUNTING BRACKET



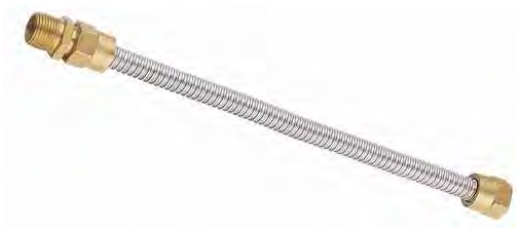
JP-2300-PK POST MOUNTING BRACKET
(includes nuts/bolts hardware for post clamp)



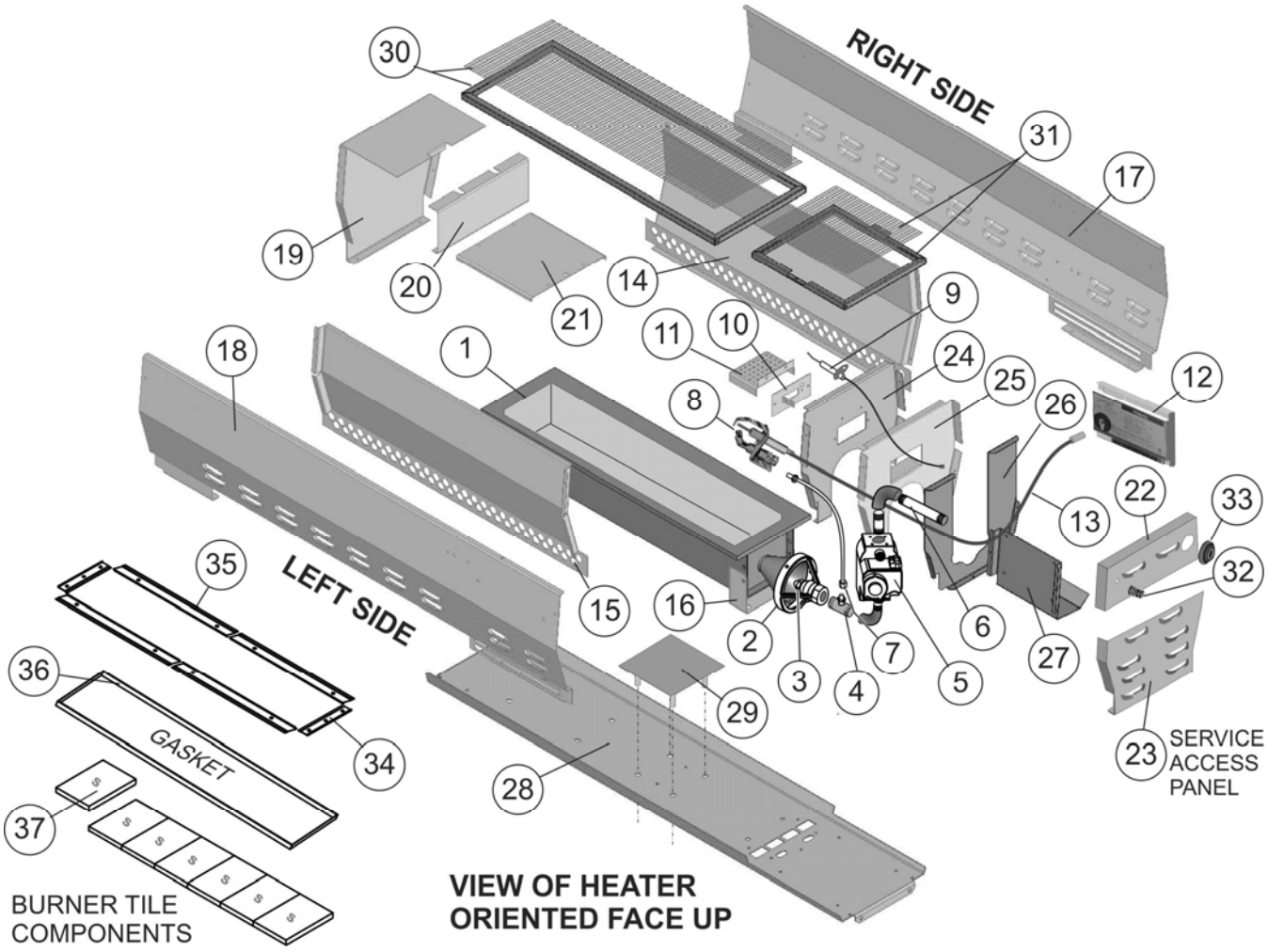
JP-2300-MK ARM MOUNTING KIT



JL-0771-XX 1/2” X 24” STAINLESS STEEL FLEXIBLE GAS CONNECTOR



23. Replacement Parts List



REPLACEMENT PARTS LIST			2135 / IO-135	2150 / IO-150
#	PART NAME	QUANTITY	PART #	PART #
1	Burner Body (with Tiles Installed)	1	JX-X037-BO	JX-X050-BO
2	Orifice holder	1	JX-0210-XX	JX-0210-XX
3	Orifice - NG	1	JX-0738-DM	JX-0731-DM
	Orifice - LPG	1	JX-0750-DM	JX-0746-DM
4	3" Nipple with Pilot Nipple	1	JX-0209-ZZ	JX-0209-ZZ
5	Single-Stage Gas Valve - Natural Gas	1	JL-0701-XX	JL-0701-XX
	Single-Stage Gas Valve- LP Gas	1	JL-0703-XX	JL-0703-XX
	Two-Stage Gas Valve - Natural Gas Only	1	*Models: 2152; IO-152:* JA-0506-TT	
6	4" nipple	1	JS-0590-GA	JS-0590-GA
7	Pilot Gas Tube	1	JX-0205-PT	JX-0205-PT
8	Pilot/Igniter Assembly (NG Pilot Orifice)	1	JX-0205-NG	JX-0205-NG
	Pilot/Igniter Assembly (LP Pilot Orifice)	1	JX-0205-LP	JX-0205-LP
9	Flame Sensor	1	JA-0569-XX	JA-0569-XX
10	Pilot/Igniter/Sensor Bracket	1	JX-0205-BK	JX-0205-BK

REPLACEMENT PARTS LIST			2135 / IO-135	2150 / IO-150
#	PART NAME	QUANTITY	PART #	PART #
11	Pilot Flame Shield	1	JX-0205-FS	JX-0205-FS
12	DSI control FENWAL	1	JP-2573-FW	JP-2573-FW
13	Spark Wire - High Voltage	1	JX-0228-XX	JX-0228-XX
STANDARD MODEL - BLACK COATED FINISH ENCLOSURE COMPONENTS				
14	Right Interior Reflector	1	JP-2100-RS	JP-2100-RS
15	Left Interior Reflector	1	JP-2100-RS	JP-2100-RS
16	Burner Saddle Bracket	2	JP-2100-HF	JP-2100-HF
17	Right Exterior Panel	1	JP-2100-RP-R	JP-2100-RP-R
18	Left Exterior Panel	1	JP-2100-RP-L	JP-2100-RP-L
19	Burner End Panel	1	JP-2100-EP	JP-2100-EP
20	Interior Burner End Plate	1	JP-2100-IE	JP-2100-IE
21	Horizontal Separation Plate 2135	1	JP-2135-HP	-
22	Component End Fixed Plate	1	JP-2100-PF	JP-2100-PF
23	Component Service Access Panel	1	JP-2100-PA	JP-2100-PA
24	Burner Side Divider	1	JP-2100-SP	JP-2100-SP
25	Control Side Divider	1	JP-2100-IG	JP-2100-IG
26	Control Heat Shield Divider	1	JP-2100-VP	JP-2100-VP
27	Control Bracket / Weather Shield	1	JX-0206-CB	JX-0206-CB
28	Hanging Support Bracket	1	JP-2100-HS	JP-2100-HS
29	Mounting Bracket Adapter	1	JP-2100-HB	JP-2100-HB
30	Burner Screen / Frame Assembly	1	JP-2100-BS	JP-2100-BS
31	Control Screen / Frame Assembly	1	JP-2100-CS	JP-2100-CS
32	Wire Grommet	1	JP-2036-XX	JP-2036-XX
33	Pipe Nipple grommet	1	JP-2101-XX	JP-2101-XX
34	Tile retainer - Each End	1	JX-0243-XX	JX-0243-XX
35	Tile retainer - Sides	4	JX-0243-XB (9 inch)	JX-0243-XC (12-5/8 inch)
36	Gasket Set	1	JX-0245-XX	JSX-0246-XX
37	Ceramic tile	5 / 7	JL-0740-XX (each)	JL-0740-XX (each)
STAINLESS STEEL ENCLOSURE MODEL			**2135-SS / IO-135-SS**	**2150-SS / IO-150-SS**
#	PART NAME	QUANTITY	PART #	PART #
17	Right Exterior Panel	1	JP-210S-RP-R	JP-210S-RP-R
18	Left Exterior Panel	1	JP-210S-RP-L	JP-210S-RP-L
19	Burner End Panel	1	JP-210S-EP	JP-210S-EP
22	Component End Fixed Panel	1	JP-210S-PB	JP-210S-PB
23	Component Service Access Panel	1	JP-210S-PA	JP-210S-PA
30	Burner Frame Assembly w/ Screen*	1	JP-210S-BS	JP-210S-BS
31	Control Frame Assembly w/ Screen*	1	JP-210S-CS	JP-210S-CS

* *Screen insert is highly polished aluminum*

Schwank
INNOVATIVE HEATING SOLUTIONS

LIMITED WARRANTY CERTIFICATE

infrasave
radiant heaters

GAS-FIRED INFRA-RED PATIO HEATERS: 2100, 2100-SS, 2152 (-SS); IO-100, IO-100-SS, 10-152 (-SS) SERIES

The Manufacturer warrants that this product is free from defects in material or workmanship under normal use and service subject to the terms of this document.

ONE YEAR WARRANTY

Subject to the conditions and limitations stated herein, during the term of this limited warranty, we will supply any component part (at our option a new or repaired component part) of the heater as defined below, excluding any labor , which the Manufacturer's examination determines to be defective in workmanship or material for a period of one year (1 year) from the date of installation, unless otherwise specified below. This warranty applies to the heater's original owner, and subsequent transferees and only if the unit is installed and operated in accordance with the printed instructions accompanying the unit and in compliance with all applicable installation codes and good trade practices.

BURNER AND CERAMIC TILES - THREE YEAR WARRANTY

The Manufacturer warrants the burner assembly and the ceramic tiles for a period of three years (3 years).

WHAT IS NOT COVERED

The Manufacturer shall not be responsible for any expenses, including service, labor, diagnosis, analysis, material or transportation charges incurred during removal or reinstallation of this product, or any of its components or parts. All labor or service charges shall be paid by the owner. This warranty does not cover heating products improperly installed, misused, exposed to or damaged by negligence, accident, corrosive or contaminating atmosphere, water, excessive thermal shock, impact, abrasion, normal wear due to use, alteration or operation contrary to the owner's manual or if the serial number has been altered, defaced or removed. This warranty shall not apply if the input to the heating product exceeds by more than 2% of the rated input on the rating plate. The Manufacturer shall not be liable for any default or delay in performance by its warranty caused by any contingency beyond its control, including war, government restrictions, or restraints, strikes, fire, flood, acts of God, or short or reduced supply of raw materials or products.

WARRANTY PROCEDURE

To establish the installation date for any purpose under this Limited Warranty, you must retain the original records that can establish the installation date of your unit. If you do not provide such documents, the start date of the term of this Limited Warranty will be based upon the date of unit manufacture, plus thirty (30) days. Failure to maintain the equipment through regular annual service maintenance by a qualified service technician shall void the warranty.

LIMITATIONS AND EXCLUSIONS

This document contains all warranties made by the Manufacturer and may not be varied, altered or extended by any person. There are no promises, or agreements extending from the Manufacture other than the statements contained herein. THIS WARRANTY IS IN LIEU OF ALL WARRANTIES EXPRESSED OR IMPLIED, TO THE EXTENT AUTHORIZED BY THE LAWS OF THE JURISDICTION, INCLUDING SPECIFICALLY THE WARRANTIES OR MERCHANTIBILITY OF FITNESS FOR A PARTICULAR PURPOSE.

It is understood and agreed that the Manufacturer's obligation hereunder is limited to repairing or replacing parts determined to be defective as stated above. In no event shall the Manufacturer be responsible for any alleged personal injuries or other special, incidental or consequential damages. As to property damages, contract, tort or other claim the Manufacturer's responsibility shall not exceed the purchase priced paid for the product.

All replacement parts will be warranted for the unused portion of the warranty coverage period remaining on the appli-

Some Authorities do not allow certain warranty exclusions or limitations on duration of warranty or the exclusions or limitations of incidental or consequential damages. In such cases, the above limitations or exclusions may not apply to you and are not intended to do so where prohibited by law. This warranty gives you specific legal rights. You may also have other rights which vary by jurisdiction.

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